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# FIRST LINES

OF THE

# PRACTICE OF PHYSIC.

By *WILLIAM CULLEN, M.D.*

*LATE PROFESSOR OF THE PRACTICE OF PHYSIC IN THE UNIVERSITY OF EDINBURGH, &c. &c.*

A NEW EDITION,

CAREFULLY COMPARED WITH THE AUTHOR'S MOST CORRECT EDITION.

IN TWO VOLUMES.

VOL. I.

EDINBURGH:
PRINTED FOR BELL & BRADFUTE, WILLIAM CREECH, MUNDELL, DOIG,
& STEVENSON; AND FOR WILKIE & ROBINSON, G. ROBINSON,
LONGMAN & CO. AND J. MURRAY, LONDON.

1808.

Printed by Mundell, Doig, and Stevenson, Edinburgh.

# ADVERTISEMENT.

DR. CULLEN's First Lines of the Practice of Physic are here reprinted carefully from the last Edition (that of 1784) which was revised and corrected by the AUTHOR. His *Text* only is reprinted, with the *very few notes* that he *himself* had subjoined to it. This has been done at the particular request, and under the revision of Dr. GREGORY, who succeeded Dr. CULLEN as Professor of the Practice of Physic in the University of Edinburgh, and who has, on all occasions, not only recommended very strongly this work to the perusal of his Pupils, but has always made great use of it in his Academical Lectures; some of which are avowedly given in the form of a Commentary on certain parts of Dr. CULLEN's First Lines.

As every page of this Edition has been carefully revised by Dr. GREGORY before it went to press, the Editors flatter themselves that the whole of it will be found correct.

*Edinburgh, Jan.* 20, 1803.

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THE

# AUTHOR'S PREFACE

TO THE

LAST EDITION PUBLISHED BEFORE HIS DEATH.

To deliver a system of the doctrines and rules proper for directing the practice of physic, is an undertaking that appears to me to be attended with great difficulty; and, after an experience of more than forty years in that practice, as well as after much reading and reflection, it was with great diffidence that I ever entered upon such a work. It was, however, what seemed to be my duty as a professor, that induced me to make the attempt; and I was engaged in it by the same sentiments that the illustrious Dr. Boerhaave has expressed in the following passage of the preface to his Institutions.—' *Simul enim docendo admotus eram sensi, propriorum cogitatorum explicatione docentem plus proficere, quam si opus ob alio conscriptum interpretari suscipit. Sua quippe optime intelligit, sua quique præ cæteris placent, unde clarior fere doctrina, atque animata plerumque sequitur oratio.*

*Qui vero sensa alterius exponit, infelicius sæpenumero eadem assequitur; quumque suo quisque sensu abundat, multa refutanda frequenter invenit, unde gravem frustra laborem aggravat, minusque incitata dictione utitur.'* It is well known, that a text-book is not only extremely useful, but necessary, to students who are to hear lectures: and, from the same considerations that moved Dr. Boerhaave, I also wished to have one for myself; while, at the same time, from some peculiar circumstances in my situation, I had some additional inducements to undertake such a work.

Before I was established as a professor of the practice of physic in this university, I had been employed in giving clinical lectures in the royal infirmary; and upon that occasion had delivered what, in my own opinion, seemed most just, with regard to both the nature and the cure of the diseases of which I had occasion to treat. But I soon found, that my doctrines were taken notice of as new, and peculiar to myself; and were accordingly severely criticised by those who, having long before been trained up in the system of Boerhaave, had continued to think that that system neither required any change, nor admitted of any amendment. I found, at the same time, that my doctrines were frequently criticised by persons who either had not been informed of them correctly, or who seemed not to understand them fully; and therefore, as soon as I was employed to teach a more complete system of the practice of physic,* I judged it necessary to publish a text-book, not only for the benefit of my hearers, but that I might also have an opportunity of obtaining the opinion of the public more at large, and thereby be enabled either to vindicate my doctrines, or be taught to correct them. These were the motives for my attempting the volumes I formerly published; and now, from many years experience of their utility to my hearers, as well as from the favourable reception they have met with from the public, I am induced to give a new edition of this work, not only, as I hope, more correct in many parts, but also more complete and comprehensive in its general extent.

At the first publication of this work, it was intended chiefly for the use of those gentlemen who attended my lectures; although, even then, for the reasons I have mentioned, it was rendered more full than text-books commonly are; and, in the repeated editions I have since had occasion to give, I have been constantly endeavouring to render it more full and comprehensive. In these respects, I hope the present edition will appear to be rendered more fit for general use, and better calculated to afford satisfaction to all those who think they may still receive any instruction from reading on this subject.

While I thus deliver my work in its now more improved state, with the hopes that it may be of use to others, as well as to those who hear my lectures, I must, at the same time, observe, that it presents a system which is in many respects new; and therefore I apprehend it to be not only proper, but necessary, that I should explain here upon what grounds, and from what considerations, this has been attempted.

In the first place, I apprehend, that in every branch of science, with respect to which new facts are daily acquired, and these consequently giving occasion to new reflections, which correct the principles formerly adopted, it is necessary, from time to time, to reform and renew the whole system, with all the additions and amendments which it has received, and is then capable of. That at present this is requisite with regard to the science of medicine, will, I believe, readily occur to every person who at all thinks for himself, and is acquainted with the systems which have hitherto prevailed. While, therefore, I attempt this, I think it may be allowable, and upon this occasion even proper, that I should offer some remarks on the principal systems of medicine which have of late prevailed in Europe, and that I should take notice of the present state of physic, as it is influenced by these. Such remarks, I hope, may be of some use to those who attempt to improve their knowledge by the reading of books.

Whether the practice of physic should admit of reasoning, or be entirely rested upon experience, has long been, and may still be, a matter of dispute. I shall not, however, at present enter upon the discussion of this, because I can venture to assert, that, at almost all times, the practice has been, and still is, with every person, founded more or less upon certain principles established by reasoning: and therefore, in attempting to offer some view of the present state of physic, I must give an account of those systems of the principles of the science which have lately prevailed, or may be supposed still to prevail, in Europe.

When, after many ages of darkness, which had destroyed almost the whole of ancient literature, learning was again restored in the fifteenth century; so, from causes which are well known, it was the system of Galen alone that the physicians of those days became acquainted with; and during the course of the sixteenth century, the study of physicians was almost solely employed in explaining and confirming that system. Early, indeed, in the sixteenth century, the noted Paracelsus had laid the foundation of a chemical system, which was in direct opposition to that of Galen; and, by the efficacy of the medicines employed by Paracelsus and his followers, their system came to be received by many: but the systematic physicians continued to be chiefly Galenists, and kept possession of the schools till the middle of the seventeenth century. It is not, however, necessary here to enter into any further detail respecting the fate of these two opposite sects; for the only circumstance concerning them, which I would wish at present to point out, is, that in the writings of both, the explanations they severally attempted to give of the phenomena of health or sickness, turned entirely upon the state of the fluids of the body.

Such was the state of the science of physic till about the middle of the seventeenth century, when the circulation of the blood came to be generally known and admitted; and when this, together with the discovery of the receptacle of the chyle, and of the thoracic duct, finally exploded the Galenic system. About the same period, a considerable revolution had taken place in the system of natural philosophy. In the course of the seventeenth century, Galileo had introduced mathematical reasoning; and Lord Bacon having proposed the method of induction, had thereby excited a disposition to observe facts, and to make experiments. These new modes of philosophizing, it might be supposed, would soon have had some influence on the state of medicine; but the progress of this was slow. The knowledge of the circulation did indeed necessarily lead to the consideration, as well as to a clearer view, of the organic system in animal bodies; which again led to the application of the mechanical philosophy towards explaining the phenomena of the animal economy; and it was applied accordingly, and continued, till very lately, to be the fashionable mode of reasoning on the subject. Such reasoning, indeed, must still, in several respects, continue to be applied; but it would be easy to shew, that it neither could, nor ever can be, applied to any great extent in explaining the animal economy; and we must therefore look for other circumstances, which had a greater share in modelling the system of physic.

With this view, it may be remarked, that, till the period just now mentioned, every physician, whether Galenist or chemist, had been so much accustomed to consider the state and condition of the fluids, both as the cause of disease, and as the foundation for explaining the operation of medicines, that what we may term an HUMORAL PATHOLOGY still continued to make a great part of every system. In these circumstances, it was soon perceived, that chemistry promised a much better explanation than the Galenic or Aristotelian philosophy had done; and therefore, while the latter was entirely laid aside, a chemical reasoning was everywhere received. Lord Bacon, with his usual sagacity, had early observed, that chemistry promised a great number of facts, and he thereby gave it credit; whilst the Corpuscularian philosophy, restored by Gassendi, readily united with the reasonings of the chemists; and the philosophy of Des Cartes readily united with both. From all these circumstances, an humoral, and chiefly a chemical, pathology, came to prevail very much till the end of the last century; and has indeed continued to have a great share in our systems, down to the present time.

It is proper now, however, to observe, that about the beginning of the present (eighteenth) century, when every part of science came to be on a more improved and correct footing, there appeared, in the writings of Stahl, of Hoffman, and of Boerhaave, three new, and considerably different, systems of physic, which have ever since had a great share in directing the practice of it. In order, therefore, to give a nearer view of the present state of physic, I shall offer some remarks upon these different systems; endeavouring to point out the advantages, as well as the disadvantages, of each, and how far they still prevail; or, according to my judgment, deserve to do so.

I shall begin with considering that of Dr. Stahl, which, I think, appeared first, and for a long time after was the prevailing system in Germany.

The chief and leading principle of this system is, that the rational soul of man governs the whole economy of his body. At all times, physicians have observed, that the animal economy has in itself a power or condition, by which, in many instances, it resists the injuries which threaten it; and by which it also, on many occasions, corrects or removes the disorders induced, or arising in it. This power, physicians very anciently attributed, under a vague idea, to an agent in the system, which they called NATURE; and the language of a *vis conservatrix et medicatrix naturæ*, has continued in the schools of medicine from the most ancient times to the present.

Dr. Stahl has explicitly founded his system on the supposition, that the power of nature, so much talked of, is entirely in the rational soul. He supposes, that, upon many occasions, the soul acts independently of the state of the body; and that, without any physical necessity arising from that state, the soul, purely in consequence of its intelligence, perceiving the tendency of noxious powers threatening, or of disorders anywise arising in the system, immediately excites such motions in the body as are suited to obviate the hurtful or pernicious consequences which might otherwise take place. Many of my readers may think it was hardly necessary for me to take notice of a system founded upon so fanciful an hypothesis: but there is often so much seeming appearance of intelligence and design in the operations of the animal economy, that many eminent persons, as Perrault in France, Nichols and Mead in England, Porterfield and Simson in Scotland, and Gaubius in Holland, have very much countenanced the same opinion, and it is therefore certainly entitled to some regard. It is not, however, necessary for me here to enter into any refutation of it. Dr. Hoffman has done this fully, in his *Commentarius de differentia inter Hoffmanni doctrinam medico-mechanicam et G. E. Stahlii medico-orgánicam;* and both Boerhaave and Haller, though no favourers of materialism, have maintained a doctrine very opposite to that of Stahl.

In my Physiology, I have offered some arguments against the same; and I shall only add now, that whoever considers what has been said by Dr. Nichols in his *Oratio de Anima Medica*, and by Dr. Gaubius in some parts of his Pathology, must perceive, that the admitting of such a capricious government of the animal economy, as these authors in some instances suppose, would at once lead us to reject all the physical and mechanical reasoning we might employ concerning the human body. Dr. Stahl himself seems to have been aware of this; and therefore, in his preface to Juncker's *Conspectus Therapeiæ Specialis*, has acknowledged, that his general principle was not at all necessary; which is in effect saying, that it is not compatible with any system of principles that ought to govern our practice. Upon this footing, I might have at once rejected the Stahlian principle: but it is even dangerous to bring any such principle into view; for, after all Dr. Stahl had said in the passage just now referred to, I find, that, in the whole of their practice, both he and his followers have been very much governed by their general principle. Trusting much to the constant attention and wisdom of nature, they have proposed the *art of curing by expectation;* have therefore, for the most part, proposed only very inert and frivolous remedies; have zealously opposed the use of some of the most efficacious, such as opium and the Peruvian bark; and are extremely reserved in the use of general remedies, such as bleeding, vomiting, &c.

Although these remarks, upon a system which may now be considered as exploded or neglected, may seem superfluous, I have been willing to give these strictures on the Stahlian system, that I might carry my remarks a little farther, and take this opportunity of observing, that, in whatever manner we may explain what have been called the operations of nature, it appears to me, that the general doctrine of *nature curing diseases*, the so-much-vaunted *Hippocratic* method of curing, has often had a very baneful influence on the practice of physic; as either leading physicians into, or continuing them in, a weak and feeble practice; and, at the same time, superseding or discouraging all the attempts of art. Dr. Huxham has properly observed, that even in the hands of Sydenham, it had this effect. Although it may sometimes avoid the mischiefs of bold and rash practitioners, yet it certainly produces that caution and timidity which have ever opposed the introduction of new and efficacious remedies. The opposition to chemical medicines in the sixteenth and seventeenth centuries, and the noted condemnation of antimony, by the medical faculty of Paris, are to be attributed chiefly to those prejudices, which the physicians of France did not entirely get the better of for near an hundred years after. We may take notice of the reserve it produced in Boerhaave, with respect to the use of the Peruvian bark. We have had lately published, under the title of *Constitutiones Epidemicæ*, notes of the particular practice of the late Baron Van Swieten; upon which the editor very properly observes, that the use of the bark, in intermitting fevers, appears very rarely in that practice; and we know very well where Van Swieten learned that reserve.

I might go farther, and shew how much the attention to the *Autocrateia*, allowed of, in one shape or other, by every sect, has corrupted the practice among all physicians, from Hippocrates to Stahl. It must, however, be sufficiently obvious, and I shall conclude the subject with observing, that although the *vis medicatrix naturæ* must unavoidably be received as a fact; yet, whereever it is admitted, it throws an obscurity upon our system; and it is only where the importance of our art is very manifest and considerable, that we ought to admit of it in practice.

To finish our remarks upon the Stahlian system, I shall shortly observe, that it did not depend entirely upon the *Autocrateia*, but also supposed a state of the body and diseases, that admitted of remedies, which, under the power and direction of the soul, acted upon the organization and matter of the body, so as to cure its diseases. Upon this footing, the Stahlian pathology turned entirely upon Plethora and Cacochymy. It was with respect to the former that they especially applied their doctrine of the *Autocrateia* in a very fanatical manner; and, with respect to the latter, they have been involved in a humoral pathology as much as the systematic physicians who had gone before them, and with a theory so incorrect as not to merit now the smallest attention. After all, I ought not to dismiss the consideration of the Stahlian system, without remarking, that as the followers of this system were very intent upon observing the method of nature, so they were very attentive in observing the phenomena of diseases, and have given us in their writings many facts not to be found elsewhere.

While the doctrines of Stahl were prevailing in the university of Halle, Dr. Hoffman, a professor in the same university, proposed a system that was very different. He received into his system a great deal of the mechanical Cartesian, and chemical doctrines of the systems which had appeared before: but, with respect to these, it is of no consequence to observe in what manner he modified the doctrines of his predecessors, as his improvements in these respects were nowise considerable, and no part of them now remain; and the real value of his works, beyond what I am just now going to mention, rests entirely on the many facts they contain. The merit of Dr. Hoffman and of his work is, that he made, or rather suggested, an addition to the system, which highly deserves our attention. Of this I cannot give a clearer account than by giving it in the author's own words. In his *Medicina Rationalis Systematica*, tom. iii, § 1, chap. 4, he has given his *Genealogia morborum ex turbato solidorum et fluidorum mechanismo;* and in the 46th and last paragraph of this chapter, he sums up his doctrine in the following words: *Ex hisce autem omnibus uberius hactenus excussis, perquam dilucide apparere arbitror, quod solus* SPASMUS *et simplex* ATONIA, *æquabilem, liberum, ac proportionatum*

*sanguinis omnisque generis fluidorum motum, quibus excretionum successus et integritas functionum animi et corporis proxime nititur, turbando ac pervertendo, universam vitalem œconomiam subruant ac destruant; atque hinc universa pathologia longe rectius atque facilius* EX VITIO MOTUUM MICROCOSMICORUM IN SOLIDIS, *quam* EX VARIIS AFFECTIONIBUS VITIOSORUM HUMORUM, *deduci atque explicari possit, adeoque omnis generis ægritudines internæ, ad* PRÆTERNATURALES GENERIS NERVOSI AFFECTIONES *sint referendæ. Etenim læsis quocunque modo, vel nervis per corpus discurrentibus, vel membranosis quibusvis nervosis partibus, illico motuum anomaliæ, modo leviores, modo graviores, subsequuntur. Deinde attenta observatio docet, motus quosvis morbosus principaliter sedem figere et tyrannidem exercere in nervosis corporis partibus, cujus generis præter omnes canales, qui systaltico et diastaltico motu pollentes, contentos succos tradunt, universum nimirum intestinorum et ventriculi ab œsophago ad anum canalem, totum systema vasorum arteriosorum, ductuum biliariorum, salivalium, urinariorum et subcutaneorum, sunt quoque membranæ nerveo-musculares cerebri et medullæ spinalis, præsertim hæc, quæ dura mater vocatur, organis sensoriis obductæ, nec non tunicæ illæ ac ligamenta, quæ ossa cingunt artusque firmant. Nam nullus dolor, nulla inflammatio, nullus spasmus, nulla motus et sensus impotentia, nulla febris aut humoris ullius ex-*

*cretio, accidit, in qua non hæ partes patiantur. Porro etiam omnes, quæ morbos gignunt causæ, operationem suam potissimam perficiunt in partes motu et sensu præditas, et canales ex his coagmentatos, eorum motum, et cum hoc fluidorum cursum, pervertendo; ita tamen, ut sicuti variæ indolis sunt, sic etiam varie in nerveas partes agant, iisdemque noxam affricent. Demum omnia quoque eximiæ virtutis medicamenta, non tam in partis fluidas, earum crasin ac intemperiem corrigendo, quam potius in solidas et nervosas, earundem motus alterando ac moderando, suam edunt operationem: De quibus tamen omnibus, in vulgari usque eo recepta morborum doctrina, altum est silentium.*

It is true, that Dr. Willis had laid a foundation for this doctrine, in his *Pathologia Cerebri et Nervorum*; and Baglivi had proposed a system of this kind in his *Specimen de fibra motrici et morbosa.* But, in these writers, it was either not extensively applied to diseases, or was still so involved in many physiological errors, that they had attracted little attention; and Dr. Hoffman was the first who gave any tolerably simple and clear system on the subject, or pointed out any extensive application of it to the explanation of diseases.

There can be no sort of doubt that the phenomena of the animal economy in health and in sickness, can only be explained by considering the state and affections of the primary moving powers in it. It is to me surprising, that physicians were so long of perceiving this, and I think we are therefore particularly indebted to Dr. Hoffman, for putting us into the proper train of investigation; and it every day appears, that physicians perceive the necessity of entering more and more into this inquiry. It was this, I think, which engaged Dr. Kaaw Boerhaave to publish his work entitled *Impetum faciens*; as well as Dr. Gaubius to give the Pathology of the *Solidum vivum*. Even the Baron Van Swieten has, upon the same view, thought it necessary, in at least one particular, to make a very considerable change in the doctrine of his master, as he has done in his commentary upon the 755th aphorism. Dr. Haller has advanced this part of science very much by his experiments on irritability and sensibility. In these, and in many other instances, particularly in the writings of Mr. Barthez of Montpelier, of some progress in the study of the affections of the nervous system, we must perceive how much we are indebted to Dr. Hoffman for his so properly beginning it. The subject, however, is difficult: the laws of the nervous system, in the various circumstances of the animal economy, are by no means ascertained; and, from want of attention and observation with the view to a system on this subject, the business appears to many as an inexplicable mystery. There is no wonder, therefore, that on such a difficult subject, Dr. Hoffman's system was imperfect and incorrect, and has had less influence on the writings and practice of physicians since his time than might have been expected. He himself has not applied his fundamental doctrine so extensively as he might have done; and he has everywhere intermixed an humoral pathology, as incorrect and hypothetical as any other. Though he differed from his colleague Dr. Stahl, in the fundamental doctrines of his system, it is but too evident that he was very much infected with the Stahlian doctrines of Plethora and Cacochymy, as may be observed throughout the whole course of his work; and particularly in his chapter *De morborum generatione ex nimia sanguinis quantitate et humorum impuritate.*

But it is needless for me to dwell any longer upon the system of Hoffman: and I am next to offer some remarks on the system of Dr. Boerhaave, the contemporary of both the other systematics, and who, over all Europe, and especially in this part of the world, gained higher reputation than either of the others.

Dr. Boerhaave was a man of general erudition; and, in applying to medicine, he had carefully studied the auxiliary branches of anatomy, chemistry, and botany, so that he excelled in each. In forming a system of physic, he seems to have studied diligently all the several writings of both ancient and modern physicians; and, without prejudice in favour of any former systems, he endeavoured to be a candid and genuine eclectic. Possessed of an excellent systematic genius, he gave a system superior to any that had ever before appeared. As in the great extent, and seemingly perfect consistency, of system, he appeared to improve and refine upon every thing that had before been offered, and as in his lectures he explained his doctrines with great clearness and elegance, he soon acquired a very high reputation, and his system was more generally received than any former had been since the time of Galen. Whoever will consider the merits of Dr. Boerhaave, and can compare his system with that of former writers, must acknowledge that he was very justly esteemed, and gave a system which was at that time deservedly valued.

But, in the progress of an inquisitive and industrious age, it was not to be expected that any system should last so long as Boerhaave's has done. The elaborate commentary of Van Swieten on Boerhaave's system of practice, has been only finished a few years ago; and though this commentator has added many facts, and made some corrections, he has not, except in the particular mentioned above, made any improvement in the general system. It is even surprising, that Boerhaave himself, though he lived near forty years after he had first formed his system, had hardly, in all that time, made any corrections of it, or additions to it: the following is the most remarkable. In aphorism 755, the words *forte et nervosi, tam cerebri quam cerebelli cordi destinati inertia*, did not appear in any edition before the fourth; and what a difference of system this points at, every physician must perceive.

When I first applied to the study of physic, I learned only the system of Boerhaave; and even when I came to take a professor's chair in this university, I found that system here in its entire and full force; and as I believe it still subsists in credit elsewhere, and that no other system of reputation has been yet offered to the world, I think it necessary for me to point out particularly the imperfections and deficiencies of the Boerhaavian system, in order to shew the propriety and necessity of attempting a new one.

To execute this, however, so fully as I might, would lead me into a detail that can hardly be admitted of here; and I hope it is not necessary, as I think, that every intelligent person, who has acquired any tolerable knowledge of the present state of our science, must, in many instances, perceive its imperfections. I shall therefore touch only upon the great lines of this system; and from the remarks I am to offer, trust that both the mistakes and deficiencies which run through the whole of his works will appear.

Dr. Boerhaave's treatise of the diseases of the simple solids, has the appearance of being very clear and consistent, and was certainly considered by him as a fundamental doctrine: but, in my apprehension, it is neither correct, nor extensively applicable. Not to mention the useless, and perhaps erroneous, notion of the composition of earth and gluten; nor his mistake concerning the structure of compound membranes; nor his inattention to the state of the cellular texture; all of them circumstances which render his doctrine imperfect; I shall insist only upon the whole being very little applicable to the explaining the phenomena of health or sickness. The laxity or rigidity of the simple solid does indeed take place at the different periods of life, and may, perhaps, upon other occasions, occur as the cause of disease: but I presume, that the state of the simple solid is, upon few occasions, either changeable or actually changed; and that, in ninety-nine cases of an hundred, the phenomena attributed to such a change, do truly depend on the state of the *solidum vivum;* a circumstance which Dr. Boerhaave has hardly taken notice of in any part of his works. How much this shews the deficiency and imperfection of his system, I need not explain. The learned work of Dr. Gaubius, above referred to, as well as many other treatises of late authors, point out sufficiently the defects and imperfections of Boerhaave on this subject.

After Dr. Boerhaave has considered the diseases of the solids, he, in the next place, attempts to explain the more simple diseases of the fluids; and there, indeed, he delivers a more correct doctrine of acid and alkali than had been given before: but, after all, he has done it very imperfectly. We have, indeed, since his time, acquired more knowledge upon the subject of digestion; and so much as to know, that a great deal more is yet necessary to enable us to understand in what manner the animal fluids are formed from the aliments taken in. And although Dr. Boerhaave has fallen into no considerable error with respect to a morbid acidity in the stomach, he could not possibly be complete upon that subject; and his notion of the effects of acidity in the mass of blood seems to have been entirely mistaken, and is indeed not consistent with what he himself has delivered elsewhere.

His doctrine of alkali is somewhat better founded, but it is probably carried too far; and the state of alkalescency and putrefaction, as well as all the other changes which can take place in the condition of animal fluids, are particulars yet involved in great obscurity, and are therefore still subjects of dispute.

There is another particular, in which Boerhaave's doctrine concerning the fluids appears to me imperfect and unsatisfactory; and that is, in his doctrine *de Glutinoso spontaneo.* The causes which he has assigned for it are by no means probable, and the actual existence of it is seldom to be proved. Some of the proofs adduced for the existence of the *phlegma calidum* are manifestly founded on a mistake with respect to what has been called the inflammatory crust, (see Van Swieten's Commentary, page 96); and the many examples given by Boerhaave, of a *glutinosum* appearing in the human body (*aph.* 75) are all of them nothing more than instances of collections or concretions found out of the course of the circulation.

If, then, we consider the imperfection of Dr. Boerhaave's doctrine with respect to the state and various condition of the animal fluids; and if, at the same time, we reflect how frequently he and his followers have employed the supposition of an acrimony or lentor of the fluids, as causes of disease, and for directing the practice; we must, as I apprehend, be satisfied, that his system is not only deficient and incomplete, but fallacious and apt to mislead. Although it cannot be denied, that the fluids of the human body suffer various morbid changes; and that, upon these, diseases may primarily depend; yet I must beg leave to maintain, that the nature of these changes is seldom understood, and more seldom still is it known when they have taken place; that our reasonings concerning them have been, for the most part, purely hypothetical; have therefore contributed nothing to improve, and have often misled, the practice of physic. In this, particularly, they have been hurtful, that they have withdrawn our attention from, and prevented our study of, the motions of the animal system, upon the state of which the phenomena of diseases do more certainly and generally depend. Whoever, then, shall consider the almost total neglect of the state of the moving powers of the animal body, and the prevalence of an hypothetical humoral pathology, so conspicuous in every part of the Boerhaavian system, must be convinced of its very great defects, and perceive the necessity of attempting one more correct.

After giving this general view, it is not requisite to enter into particulars: but I believe there are very few pages of his aphorisms in which there does not occur some error or defect; although, perhaps, not to be imputed to the fault of Boerhaave so much as to this, that since his time a great collection of new facts has been acquired by observation and experiment. This, indeed, affords the best and most solid reason for attempting a new system: for, when many new facts have been acquired, it becomes requisite that these should be incorporated into a system, whereby not only particular subjects may be improved, but the whole may be rendered more complete, consistent, and useful. Every system, indeed, must be valuable in proportion to the number of facts that it embraces and comprehends; and Mons. Quesney could not pay a higher compliment to the system of Boerhaave, than by saying that it exhibited *La Médecine collective.*

But here it will, perhaps, be suggested to me, that the only useful work on the subject of physic, is the making a collection of all the facts that relate to the art, and therefore of all that experience has taught us with respect to the cure of diseases. I agree entirely in the opinion; but doubt if it can ever be properly accomplished, without aiming at some system of principles, by a proper induction and generalization of facts: at least I am persuaded, that it can be done not only very safely, but most usefully, in this way. This, however, must be determined by a trial. I know that the late Mr. Lieutaud has attempted a work on the plan of collecting facts, without any reasoning concerning their causes: and while I am endeavouring to give some account of the present state of physic, I cannot dismiss the subject without offering some remarks upon the promising *Synopsis universæ medicinæ*, composed by the first physician of a learned and ingenious nation.

In this work there are many facts and much observation from the author's own experience, which may be useful to those who have otherwise acquired some knowledge and discernment; but, throughout the whole work, there is such total want of method, arrangement, system, or decision, that, in my humble opinion, it can be of little use, and may prove very perplexing to those who are yet to learn. The distinction of the genera of diseases, the distinction of the species of each, and often even that of the varieties, I hold to be a necessary foundation of every plan of physic, whether dogmatical or empirical. But very little of this distinction is to be found in the work of Mr. Lieutaud; and in his preface he tells us, that he meant to neglect such *arguta sedulitas.* And indeed his method of managing his subject must certainly interrupt and retard all methodical nosology. His arrangement of diseases is according to no affinity, but that of the slightest and uninstructive kind, the place of the body which they happen to affect. His *Generalia et incertæ sedis*, have hardly any connection at all; the titles, *Rheumatismus*, *Hypochondriasis*, *Hydrops*, follow one another. When he does attempt any general doctime, it is not till long after he has treated of the widely-scattered particulars. Under each particular title which he assumes, he has endeavoured to enumerate the whole of the symptoms that ever appeared in a disease under that title; and this without aiming at any distinction between the essential and accidental symptoms, or marking the several combinations under which these symptoms do for the most part steadily appear. From the concurrence of accidental symptoms, the variety of the same disease is frequently considerable, a circumstance necessarily perplexing and distracting to young practitioners; but it seems strange to me, that an experience of thirty years, in considerable practice, could do nothing to relieve them.

Mr. Lieutaud has, at the same time, increased the confusion that must arise from this want of distinction, by his considering as primary diseases, what appear to me to be the symptoms, effects, and sequels, of other diseases only. Of this I think the *Æstus morbosus*, *Virium exolutio*, *Dolorus*, *Stagnatio sanguinis*, *Purulentia*, *Tremor*, *Pervigilium*, *Raucedo*, *Suffocatio*, *Vomica*, *Empyema*, *Singultus*, *Vomitus*, *Dolor stomachi*, *Tenesmus*, all treated of under separate titles, are examples. A general symptomatologia may be a very useful work, with a view to a system of pathology; but, with a view to practice without any system, it must have bad effects, as leading only to a palliative practice, and diverting from the proper efforts towards obtaining a radical cure. Mr. Lieutaud, indeed, has endeavoured to exhibit the symptoms above mentioned as so many *primary diseases:* but he has seldom succeeded in this; and, in delivering the practice, he commonly finds it necessary to consider them as symptoms, and that not without some theory, implied or expressed, with respect to their proximate causes. His title of *Dolores* may be taken as an example of this; and from which it may be readily perceived how far such treatises can be really useful.

In establishing a proper pathology, there is nothing that has been of more service than the dissection of morbid bodies. Mr. Lieutaud has been much and most commendably employed in this way, and in this Synopsis he has endeavoured to communicate his knowledge on the subject; but, in my humble opinion, he has seldom done it in a manner that can be useful. In the same way that he has delivered the symptoms of diseases, without any instructive arrangement; so, on the subject of the appearances after death, he has mentioned every morbid appearance that had ever been observed after the disease of which he is then treating: but these appearances are strangely huddled together, without any notice taken of those which belong to one set of symptoms or to another; and, with regard to the whole, without any attempt to distinguish between the causes of diseases and the causes of death; although the want of such distinction is the well-known ground of fallacy upon this subject. I take for an example, the appearances mentioned as having been observed after dropsy. Here morbid appearances, found in every part of the body, in every cavity of it, and in every viscus contained in these cavities, are enumerated; but which of these morbid states are more frequent or more rare, and which had been more particularly connected with the different causes, or with the different state of symptoms previously recited, we are not informed, nor has he enabled us to discover. In short, the dissection of morbid bodies has been, and may be, highly useful; but, in order to be so, it must be under a different management from what we find, either in this Synopsis, or even in the *Historia Anatomico-medica.*

I cannot dismiss this subject without remarking, that the dissection of morbid bodies is chiefly valuable upon account of its leading us to discover the proximate causes of diseases: and the great and valuable work of the illustrious Morgagni is properly entitled *De sedibus et* CAUSIS. It may well seem surprising, then, that Lieutaud should find the whole of proximate causes *atra caligine mersas;* and that he should never have thought of applying his dissections towards the ascertaining at least some of these.

But let me now proceed to consider the important part of every practical work, and of this *Synopsis universæ medicinæ*; that is, the method of curing diseases.

Here, again, upon the same plan as in giving the histories of disease, the method of cure is delivered by enumerating the whole of the remedies that have ever been employed in a disease under the title prefixed; without assigning the species, or the circumstances to which the remedies, though of a very different and sometimes opposite nature, are peculiarly adapted. On the subject of asthma, he very justly observes, that physicians have been to blame in confounding, under this title, almost all the species of dyspnœa; and he himself very properly considers asthma as a disease distinct from all the other cases of dispnœa. Still, however, he considers asthma as of many different species, arising from many different causes, which, till we understand better, we cannot attempt to remove. Notwithstanding all this, he proceeds to deliver a very general cure. '*Parum abest*,' says he, '*quin specifici titulo gaudeant pectoralia, vulneraria, et incidentia!*' But from such language I receive no clear idea; nor can I obtain any clear direction from the enumeration of his medicines. *Baccæ juniperi, gummi tragacanthum vel ammoniacum, sapo, aqua picea, terebinthina,* &c. *quæ tamen haud indiscriminatim sunt usurpanda, sed pro* *re nata, delectu opus est.* Very justly indeed, *delectu opus est;* but here, as in many other instances, he gives us no sort of assistance.

From his endeavours, though not always successful, to neglect all system, his practice is generally delivered in a very indecisive manner; or, what has the same effect, in a way so conditional as will render it always difficult, and often impossible, for a young practitioner to follow him. Let us take, for example, his cure of dropsy. 'The 'cure may be begun by blood-letting in certain 'conditions; *but, in others, it cannot be employ-'ed without danger.* It gives relief in difficult 'breathing; *but, after it is practised, the symp-'toms are aggravated, and rendered more obsti-'nate.* It is not to be concealed, that some per-'sons have been cured by repeated blood-lettings, 'or spontaneous hemorrhagies; *but it is at the 'same time* known, *that such a remedy inoppor-'tunely employed, has in many instances hastened 'on the fatal event.*'

In the same manner he treats of vomiting, purging, sweating, and the use of mineral waters: but I must confess, that he has nowhere removed any of my doubts or difficulties, and indeed he has sometimes increased them. He says, that hepatics, or aperients, such as the *lingua cervina, herbæ capillares,* &c. deserve commendation; but that, when the disease has arisen to a certain degree, they have been, *for the most part, found to be useless.* He observes, that the powder of toads given in wine, to the quantity of a scruple or more, has succeeded with severals.

Such are, commonly, the methods of cure delivered by Mr. Lieutaud, *longiori et forte felicissima praxi edoctus.*

It would be tedious to enter further into that detail, which a criticism of this immethodical and uninstructive work might lead me into; but, if the bounds proper for this preface did not prevent me, I would particularly shew, that the work is far from being free from those reasonings which the author pretends to avoid, and would affect even to despise. He still holds the doctrines of the CONCOCTION and CRITICAL EVACUATION of MORBIFIC MATTER; doctrines depending upon subtile theories, and which, in my opinion, can in nowise be ascertained as matters of fact. Mr. Lieutaud likewise is still very much upon the old plan of following NATURE, and therefore gives often what I consider as a feeble and inert practice. The *humectantia, diluentia, demulcentia, et temperantia*, are with him very universal remedies, and often those which alone are to be employed.

The mention of these medicines might lead me to take notice of Mr. Lieutaud's second volume, in in which, *ab insulsa remediorum farragine alienus*, he promises a great reformation upon the subject: but this falls so far short of the idea of British physicians, that I need not make any remarks upon it. With respect to his list of simples, or *Emporetica*, as he is pleased to term them, an English apothecary would smile at it; and with respect to his *Officinalia*, I believe they are to be found nowhere but in the *Codex Medicamentarius* of Paris; and in his *Magistralia* his doses are generally such as the most timid practitioner of this country would hardly descend to, and such as none of our practitioners of experience would depend upon. In short, the whole of the work, both with respect to the theories with which it abounds, and to the facts which it gives, will not, in my apprehension, bear any serious criticism. But I must conclude, and shall only say further, that such as I have represented it, is this work, executed by a man of the first rank in the profession. It is indeed for that reason I have chosen it as the example of a work, upon the plan of giving facts only, and of avoiding the study, or even the notice, of the proximate causes of diseases: and with what advantage such a plan is pursued, I shall leave my readers to consider.

In the following treatise, I have followed a different course. I have endeavoured to collect the facts relative to the diseases of the human body, as fully as the nature of the work, and the bounds necessarily prescribed to it, would admit: but I have not been satisfied with giving the facts, without endeavouring to apply them to the investigation of proximate causes, and upon these to establish a more scientific and decided method of cure. In aiming at this, I flatter myself that I have avoided hypotheses, and what have been called *theories.* I have, indeed, endeavoured to establish many general doctrines, both physiological and pathological; but I trust that these are only a generalization of facts, or conclusions from a cautious and full induction; and if any one shall refuse to admit, or directly shall oppose, my general doctrines, he must do it by shewing that I have been deficient or mistaken in assuming and applying facts. I have, myself, been jealous of my being sometimes imperfect in these respects; but I have generally endeavoured to obviate the consequences of this, by proving, that the proximate causes which I have assigned are true in fact, as well as deductions from any reasoning that I may seem to have employed. Further, to obviate any dangerous fallacy in proposing a method of cure, I have always been anxious to suggest that which, to the best of my judgment, appeared to be the method approved of by experience, as much as it was the consequence of system.

Upon this general plan I have endeavoured to form a system of physic that should comprehend the whole of the facts relating to the science, and that will, I hope, collect and arrange them in better order than has been done before, as well as point out in particular those which are still wanting to establish general principles. This, which I have attempted, may, like other systems, hereafter suffer a change; but I am confident, that we are at present in a better train of investigation than physicians were in before the time of Dr. Hoffman. The affections of the motions and moving powers of the animal economy, must certainly be the leading inquiry in considering the diseases of the human body. The inquiry may be difficult; but it must be attempted, or the subject must be deserted altogether. I have, therefore, assumed the general principles of Hoffman, as laid down in the passage which I have quoted above: and if I have rendered them more correct, and more extensive in their application; and, more particularly, if I have avoided introducing the many hypothetical doctrines of the humoral pathology, which disfigured both his and all the other systems which have hitherto prevailed; I hope I shall be excused for attempting a system, which, upon the whole, may appear new.

*Edinburgh, November* 1783.

# FIRST LINES

## OF THE

# PRACTICE OF PHYSIC.

## INTRODUCTION.

1. In teaching the PRACTICE OF PHYSIC, we endeavour to give instructions for *discerning*, *distinguishing*, *preventing*, and *curing* diseases, as they occur in particular persons.

2. The art of DISCERNING and DISTINGUISHING diseases, may be best attained by an accurate and complete observation of their phenomena, as these occur in concourse and in succession; and by constantly endeavouring to distinguish the peculiar and inseparable concurrence of symptoms, to establish a METHODICAL NOSOLOGY, or an arrangement of diseases according to their genera and species, founded upon observation alone, abstracted from all reasoning. Such an arrangement I have attempted in another work, to which, in the course of the present, I shall frequently refer.

3. The prevention of diseases depends upon the knowledge of their remote causes; which is partly delivered in the general pathology, and partly to be delivered in this treatise.

4. The cure of diseases is chiefly, and almost unavoidably, founded in the knowledge of their proximate causes. This requires an acquaintance with the institutions of medicine; that is, the knowledge of the structure, action, and functions of the human body; of the several changes which it may undergo; and of the several powers by which it can be changed. Our knowledge of these particulars, however, is still incomplete, is in many respects doubtful, and has been often involved in mistake and error. The doctrine, therefore, of proximate causes, founded upon that knowledge, must be frequently precarious and uncertain. It is, however, possible for a judicious physician to avoid what is vulgarly called theory, that is, all reasoning founded upon hypothesis, and thereby many of the errors which have formerly taken place in the institutions of medicine. It is possible also for a person who has an extensive knowledge of the facts relative to the animal economy in health and in sickness, by a cautious and complete induction, to establish many general principles which may guide his reasoning with safety; and while, at the same time, a physician admits, as a foundation of practice, those reason-

ings only which are simple, obvious, and certain, and for the most part admits, as proximate causes, those alone that are established as matters of fact rather than as deductions of reasoning, he may with great advantage establish a system of practice chiefly founded on the doctrine of proximate causes. But when this cannot be done with sufficient certainty, the judicious and prudent physician will have recourse to EXPERIENCE alone; always, however, aware of the hitherto incomplete and fallacious state of empyricism.

5. With a strict attention to these considerations in the whole of the following treatise, I proceed to treat of particular diseases in the order of my Mythodical Nosology.

# PART I.

## OF PYREXIÆ, OR FEBRILE DISEASES.

6. PYREXIÆ, or febrile diseases, are distinguished by the following appearances. After beginning with some degree of cold shivering, they shew some increase of heat, and an increased frequency of pulse, with the interruption and disorder of several functions, particularly some diminution of strength in the animal functions.

7. Of these pyrexiæ I have formed a class, and have subdivided it into the five orders of FEVERS, INFLAMMATIONS, ERUPTIONS, HEMORRHAGIES, and FLUXES. See Synopsis Nosologiæ Methodicæ, edit. 3, 1780.

# BOOK I.

# OF FEVERS.

## CHAP. I.

### OF THE PHENOMENA OF FEVERS.

8. THOSE diseases are more strictly called FEVERS, which have the general symptoms of pyrexia, without having alongst with them any topical affection that is essential and primary, such as the other orders of the pyrexiæ always have.

9. Fevers, as differing in the number and variety of their symptoms, have been very properly considered as of distinct genera and species. But we suppose, that there are certain circumstances in common to all the diseases comprehended under this order, which are therefore those essentially necessary to, and properly constituting the nature of fever. It is our business, especially, and in the first place, to investigate these; and I expect to find them as they occur in the paroxysm or fit

of an intermittent fever, as this is most commonly formed.

10. The phenomena to be observed in such a paroxysm are the following: the person is affected, first with a languor or sense of debility, a sluggishness in motion, and some uneasiness in exerting it, with frequent yawning and stretching. At the same time, the face and extremities become pale; the features shrink; the bulk of every external part is diminished; and the skin, over the whole body, appears constricted, as if cold had been applied to it. At the coming on of these symptoms, some coldness of the extremities, though little taken notice of by the patient, may be perceived by another person. At length the patient himself feels a sensation of cold, commonly first in his back, but, from thence, passing over the whole body; and now his skin feels warm to another person. The patient's sense of cold increasing, produces a tremor in all his limbs, with frequent succussions or rigours of the trunk of the body. When this sense of cold, and its effects, have continued for some time, they become less violent, and are alternated with warm flushings. By degrees, the cold goes off entirely; and a heat, greater than natural, prevails, and continues over the whole body. With this heat, the colour of the skin returns, and a preternatural redness appears, especially in the face. Whilst the heat and

and redness come on, the skin is relaxed and smoothed, but, for some time, continues dry. The features of the face, and other parts of the body, recover their usual size, and become even more turgid. When the heat, redness, and turgescence, have increased and continued for some time, a moisture appears upon the forehead, and by degrees becomes a sweat, which gradually extends downwards over the whole body. As this sweat continues to flow, the heat of the body abates; the sweat, after continuing some time, gradually ceases; the body returns to its usual temperature; and most of the functions are restored to their ordinary state.

11. This series of appearances gives occasion to divide the paroxysm into three different stages, which are called the COLD, the HOT, and the SWEATING STAGES or *fits*.

In the course of these, considerable changes happen in the state of several other functions, which are now to be mentioned.

12. Upon the first approach of languor, the pulse becomes sometimes slower, and always weaker, than before. As the sense of cold comes on, the pulse becomes smaller, very frequent, and often irregular. As the cold abates, and the heat comes on, the pulse becomes more regular, hard, and full; and, in these respects, increases till the

sweat breaks out. As the sweat flows, the pulse becomes softer and less frequent, till, the sweat ceasing altogether, it returns to its usual state.

13. The respiration also suffers some changes. During the cold stage, the respiration is small, frequent, and anxious, and is sometimes attended with a cough. As the hot stage comes on, the respiration becomes fuller and more free; but continues still frequent and anxious, till the flowing of the sweat relieves the anxiety, and renders the breathing less frequent and more free. With the ceasing of the sweat, the breathing returns to its ordinary state.

14. The natural functions also suffer a change. Upon the approach of the cold stage, the appetite for food ceases, and does not return till the paroxysm be over, or the sweat has flowed for some time. Generally, during the whole of the paroxysm, there is not only a want of appetite, but an aversion from all solid, and especially animal, food. As the cold stage advances, there frequently comes on a sickness and nausea, which often increases to a vomiting of a matter that is for the most part bilious. This vomiting commonly puts an end to the cold stage, and brings on the hot. As the hot stage advances, the nausea and vomiting abate; and when the sweat breaks out, they generally cease altogether.

15. A considerable degree of thirst is commonly felt during the whole course of the paroxysm. During the cold stage, the thirst seems to arise from the dryness and clammyness of the mouth and fauces; but, during the hot stage, from the heat which then prevails over the whole body; and, as the sweat flows, the mouth becomes moister, and the thirst, together with the heat, gradually abates.

16. In the course of a paroxysm, there is often a considerable change in the state of the secretions. The circumstances just now mentioned shew it in the secretion of the saliva and mucus of the mouth; and it is still more remarkable with respect to the urine. During the cold stage, the urine is almost colourless, and without cloud or sediment. In the hot stage, it becomes high-coloured, but is still without sediment. After the sweat has flowed freely, the urine deposits a sediment commonly lateritious, and continues to do so for some time after the paroxysm is over.

17. Excepting in certain uncommon cases, which are attended throughout with a diarrhœa, stools seldom occur till towards the end of a paroxysm, when commonly a stool happens, and which is generally of a loose kind.

18. Analogous to these changes in the state of

the secretions, it frequently happens, that the tumours subsisting on the surface of the body suffer, during the cold stage of fevers, a sudden and considerable detumescence; but generally, though not always, the tumours return to their former size during the sweating stage. In like manner, ulcers are sometimes dried up during the cold stage, and return again to discharge matter during the sweating stage, or after the paroxysm is over.

19. Certain changes appear also in sensation and thought. During the cold stage, the sensibility is often greatly impaired; but when the hot stage is formed, the sensibility is recovered, and often considerably increased.

20. With respect to the intellectual functions, when the cold stage comes on, attention and recollection become difficult, and continue more or less so during the whole paroxysm. Hence some confusion of thought takes place, and often arises to a delirium, which sometimes comes on at the beginning of the cold stage, but more frequently not till the hot stage be formed.

21. It belongs also to this place to remark, that the cold stage sometimes comes on with a drowsiness and stupor, which often increases to a degree that may be called comatose or apoplectic.

22. We have still to add, that sometimes, early in the cold stage, a headach comes on; but which, more commonly, is not felt till the hot stage be formed, and then is usually attended with a throbbing of the temples. The headach continues till the sweat breaks out; but as this flows more freely, that gradually goes off. At the same time with the headach, there are commonly pains of the back, and of some of the great joints; and these pains have the same course with the headach.

23. These are nearly the whole, and are at least the chief, of the phenomena which more constantly appear in the paroxysm of an intermittent fever; and we have pointed out their ordinary concourse and succession. With respect to the whole of them, however, it is to be observed, that, in different cases, the several phenomena are in different degrees; that the series of them is more or less complete; and that the several parts or stages, in the time they occupy, are in a different proportion to one another.

24. It is very seldom that a fever consists of a single paroxysm, such as we have now described; and it more generally happens, after a certain length of time has elapsed from the ceasing of the paroxysm, that the same series of phenomena again arises, and observes the same course as be-

fore; and these states of FEVER and APYREXIA often continue to alternate with one another for many times. In such cases, the length of time from the end of one paroxysm to the beginning of another, is called an INTERMISSION; and the length of time from the beginning of one paroxysm to the beginning of another next succeeding, is called an INTERVAL.

25. When the disease consists of a number of paroxysms, it is generally to be observed, that the intervals between them are nearly equal; but these intervals are of different lengths in different cases. The most usual interval is that of forty-eight hours, which is named the TERTIAN period. The next most common is that of seventy-two hours, and is named the QUARTAN period. Some other intervals also are observed, particularly one of twenty-four hours, named therefore the QUOTIDIAN; and the appearance of this is pretty frequent. But all other intervals longer than that of the quartan, are extremely rare, and probably are only irregularities of the tertian or quartan periods.

26. The paroxysms of pure intermittent fevers are always finished in less than twenty-four hours; and though it happens that there are fevers which consist of repeated paroxysms, without any entire intermission between them; yet in such cases it is observed, that though the hot and sweating stages

of the paroxysm do not entirely cease before the twenty-four hours from their beginning have expired, they suffer, however, before that time, a considerable abatement of REMISSION of their violence; and, at the return of the quotidian period, a paroxysm is in some shape renewed, which runs the same course as before. This constitutes what is called a REMITTENT FEVER.

27. When in these remittents the remission is considerable, and the return of a new paroxysm is distinctly marked by the symptoms of a cold stage at the beginning of it, such fevers retain strictly the appellation of REMITTENTS. But when it happens, as it does in certain cases, that the remission is not considerable, is perhaps without sweat, and that the returning paroxysm is not marked by the most usual symptoms of a cold stage, but chiefly by the aggrevation or EXACERBATION of a hot stage, the disease is called a CONTINUED FEVER.

28. In some cases of continued fever, the remissions and exacerbations are so inconsiderable as not to be easily observed or distinguished; and this has led physicians to imagine, that there is a species of fever subsisting for several days together, and seemingly consisting of one paroxysm only. This they have called a CONTINENT FEVER; but, in a long course of practice, I have not had an opportunity of observing such a fever.

29. It is, however, to be observed here, that the fevers of a continued form are to be distinguished from one another; and that, while some of a very continued form do still belong to the section of intermittents, there are others which, though still consisting of separate and repeated paroxysms, yet, as different by their causes and circumstances from intermittents, are to be distinguished from the whole of these, and are more strictly to be called and considered as CONTINUED. Such are most of those which have been commonly supposed to be CONTINENT; and those which by most writers have been simply named CONTINUED, and which term I have employed as the title of a section, to be distinguished from that of INTERMITTENT.

I shall here add the marks by which, in practice, these different continued fevers may be distinguished from one another.

Those fevers of a continued form, which, however, still belong to the section of intermittents, may be distinguished by their having passed from an intermittent or remittent form, to that of a continued; by their shewing some tendency to become intermittent, or at least remittent; by their being known to have been occasioned by marsh miasmata; and, for the most part, by their having but one paroxysm, or one exacerbation and remission, in the course of twenty-four hours.

On the other hand, continued fevers, to be more strictly so called, may be distinguished by their shewing little tendency to become intermittent or remittent in any part of their course, and especially after the first week of their continuance; by their being occasioned by human contagion, at least by other causes than the marsh miasmata; and by their having pretty constantly an exacerbation and remission twice in the course of every twenty-four hours. In both cases, the knowledge of the nature of the epidemic for the time prevailing, may have a great share in determining the nature of the particular fever.

30. With respect to the form, or TYPE, of fevers, this further may be observed, that the quartan, while it has the longest interval, has, at the same time, the longest and most violent cold stage; but, upon the whole, the shortest paroxysm: That the tertian, having a shorter interval than the quarten, has, at the same time, a shorter and less violent cold stage, but a longer paroxysm: and lastly, that the quotidian, with the shortest interval, has the least of a cold stage, but the longest paroxysm.

31. The type of fevers is sometimes changed in their course. When this happens, it is generally in the following manner: both tertians and quartans change into quotidians, quotidians into remit-

tents, and these last become often of the most continued kind. In all these cases, the fever has its paroxysms protracted longer than usual, before it changes into a type of more frequent repetition.

32. From all this a presumption arises, that every fever consists of repeated paroxysms, differing from others chiefly in the circumstances and repetition of the paroxysms; and, therefore, that it was allowable for us to take the paroxysm of a pure intermittent as an example and model of the whole.

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## CHAP. II.

### OF THE PROXIMATE CAUSE OF FEVER.

33. THE proximate cause of fever seems hitherto to have eluded the research of physicians; and I shall not pretend to ascertain it in a manner that may remove every difficulty; but I shall endeavour to make an approach towards it, and such as I hope may be of use in conducting the practice in this disease: while, at the same time, I hope to avoid several errors which have formerly prevailed on this subject.

34. As the hot stage of fever is so constantly preceded by a cold stage, we presume that the latter is the cause of the former; and, therefore, that the cause of the cold stage is the cause of all that follows in the course of the paroxysm. See Boerh. aph. 756.

35. To discover the cause of the cold stage of fevers, we may observe, that it is always preceded by strong marks of general debility prevailing in the system. The smallness and weakness of the pulse, the paleness and coldness of the extreme parts, with the shrinking of the whole body, sufficiently shew, that the action of the heart and larger arteries is, for the time, extremely weakened. Together with this, the languor, inactivity, and debility of the animal motions, the imperfect sensations, the feeling of cold, while the body is truly warm, and some other symptoms, all shew that the energy of the brain is, on this occasion, greatly weakened; and I presume, that, as the weakness of the action of the heart can hardly be imputed to any other cause, this weakness also is a proof of the diminished energy of the brain.

36. I shall hereafter endeavour to shew, that the most noted of the remote causes of fever, as contagion, miasmata, cold, and fear, are of a sedative nature, and therefore render it probable that a debility is induced. Likewise, when the pa-

roxysms of a fever have ceased to be repeated, they may again be renewed, and are most commonly renewed by the application of debilitating powers. And further, the debility which subsists in the animal motions and other functions, through the whole of the fever, renders it pretty certain, that sedative or debilitating powers have been applied to the body.

37. It is therefore evident, that there are three states which always take place in a fever; a state of debility, a state of cold, and a state of heat; and as these three states regularly and constantly succeed each other in the order we have mentioned them, it is presumed that they are in the series of cause and effect with respect to one another. This we would hold as a matter of fact, even although we should not be able to explain in what manner, or by what mechanical means, these states severally produce each other.

38. How the state of debility produces some of the symptoms of the cold stage, may perhaps be readily explained; but how it produces all of them, I cannot explain otherwise than by referring the matter to a general law of the animal economy, whereby it happens, that powers which have a tendency to hurt and destroy the system, often excite such motions as are suited to obviate the effects of the noxious power. This is the VIS ME-

DICATRIX NATURÆ, so famous in the schools of physic; and it seems probable, that many of the motions excited in fever are the effects of this power.

39. That the increased action of the heart and arteries, which takes place in the hot stages of fevers, is to be considered as an effort of the *vis medicatrix naturæ*, has been long a common opinion among physicians; and I am disposed to assert, that some part of the cold stage may be imputed to the same power. I judge so, because the cold stage appears to be universally a means of producing the hot; because cold externally applied has very often similar effects; and more certainly still, because it seems to be in proportion to the degree of tremor in the cold stage, that the hot stage proceeds more or less quickly to a termination of the paroxysm, and to a more complete solution and longer intermission. See 30.

40. It is to be particularly observed, that, during the cold stage of fever, there seems to be a spasm induced everywhere on the extremities of the arteries, and more especially of those upon the surface of the body. This appears from the supression of all excretions, and from the shrinking of the external parts: and although this may perhaps be imputed, in part, to the weaker action of the heart, in propelling the blood into the extreme vessels; yet, as these symptoms often continue af-

ter the action of the heart is restored, there is reason to believe, that a spasmodic constriction has taken place; that it subsists for some time, and supports the hot stage; for this stage ceases with the flowing of the sweat, and the return of other excretions, which are marks of the relaxation of vessels formerly constricted. Hoffman. med. rat. system. tom. 4, p. 1, sect. 1, cap. 1, art. 4.

41. The idea of fever, then, may be, that a spasm of the extreme vessels, however induced, proves an irritation to the heart and arteries; and that this continues till the spasm is relaxed or overcome. There are many appearances which support this opinion; and there is little doubt that a spasm does take place, which proves an irritation to the heart, and therefore may be considered as a principal part in the proximate cause of fever. It will still, however, remain a question, what is the cause of this spasm; whether it be directly produced by the remote causes of fever, or if it be only a part of the operation of the *vis medicatrix naturæ*.

42. I am disposed to be of the latter opinion, because, in the *first* place, while it remains still certain that a debility lays the foundation of fever, it is not obvious in what manner the debility produces the spasm, and, what seems to be its effect, the increased action of the heart and arteries; and,

*secondly*, because, in almost all the cases in which an effort is made by the *vis medicatrix naturæ*, a cold fit and a spasm of the extreme vessels are almost always the beginning of such an effort. See Gaub. Pathol. Medicin. art. 750.

43. It is therefore presumed, that such a cold fit and spasm at the beginning of fever, is a part of the operation of the *vis medicatrix;* but, at the same time, it seems to me probable, that during the whole course of the fever, there is an atony subsisting in the extreme vessels, and that the relaxation of the spasm requires the restoring of the tone and action of these.

44. This it may be difficult to explain; but I think it may be ascertained as a fact, by the consideration of the symptoms which take place with respect to the functions of the stomach in fevers, such as the anorexia, nausea, and vomiting, (14).

From many circumstances it is sufficiently certain, that there is a consent between the stomach and surface of the body; and in all cases of the consent of distant parts, it is presumed to be by the connection of the nervous system, and that the consent which appears between the sentient and moving fibres of the one part with those of the other, is such, that a certain condition prevailing in the one part occasions a similar condition in the other.

In the case of the stomach and surface of the body, the consent particularly appears by the connection which is observed between the state of the perspiration, and the state of the appetite in healthy persons; and if it may be presumed that the appetite depends upon the state of tone in the muscular fibres of the stomach, it will follow, that the connection of appetite and perspiration depends upon a consent between the muscular fibres of the stomach, and the muscular fibres of the extreme vessels, or of the organ of perspiration on the surface of the body.

It is further in proof of the connection between the appetite and perspiration, and at the same time of the circumstances on which it depends, that cold applied to the surface of the body, when it does not stop perspiration, but proves a stimulus to it, is always a powerful means of exciting appetite.

Having thus established the connection or consent mentioned, we argue, that as the symptoms of anorexia, nausea, and vomiting in many cases, manifestly depend upon a state of debility or loss of tone in the muscular fibres of the stomach; so it may be presumed, that these symptoms in the beginning of fever, depend upon an atony communicated to the muscular fibres of the stomach from the muscular fibres of the extreme vessels on the surface of the body.

That the debility of the stomach which produced vomiting in the beginning of fevers actually depends upon an atony of the extreme vessels on the surface of the body, appears particularly from a fact observed by Dr. Sydenham. In the attack of the plague, a vomiting happens, which prevents any medicine from remaining on the stomach: and Dr. Sydenham tells us, that in such cases he could not overcome this vomiting but by external means applied to produce a sweat; that is, to excite the action of the vessels on the surface of the body.

The same connection between the state of the stomach and that of the extreme vessels on the surface of the body, appears from this also, that the vomiting, which so frequently happens in the cold stage of fevers, commonly ceases upon the coming on of the hot, and very certainly upon any sweat's coming out, (14). It is indeed probable, that the vomiting in the cold stage of fevers, is one of the means employed by nature for restoring the determination to the surface of the body; and it is a circumstance affording proof, both of this, and of the general connection between the stomach and surface of the body, that emetics thrown into the stomach, and operating there, in the time of the cold stage, commonly put an end to it, and bring on the hot stage.

It also affords a proof of the same connection, that cold water taken into the stomach produces an increase of heat on the surface of the body, and is very often a convenient and effectual means of producing sweat.

From the whole we have now said on this subject, I think it is sufficiently probable, that the symptoms of anorexia, nausea, and vomiting, depend upon, and are a proof of, an atony subsisting in the extreme vessels on the surface of the body; and that this atony, therefore now ascertained as a matter of fact, may be considered as a principal circumstance in the proximate cause of fever.

*45.* This atony we suppose to depend upon a diminution of the energy of the brain; and that this diminution takes place in fevers, we conclude, not only from the debility prevailing in so many of the functions of the body, mentioned above, (*35*), but particularly from symptoms which are peculiar to the brain itself. Delirium is a frequent symptom of fever: and as from the physiology and pathology we learn, that this symptom commonly depends upon some inequality in the excitement of the brain or intellectual organ; we hence conclude, that, in fever, it denotes some diminution in the energy of the brain. Delirium, indeed, seems often to depend upon an increased impetus of the blood in the vessels of the brain, and therefore attends phrenitis. It frequently appears also in the hot stage of fevers, accompanied with a headach and throbbing of the temples. But as the impetus of the blood in the vessels of the head is often considerably increased by exercise, external heat, passions, and other causes, without occasioning any delirium; so, supposing that the same impetus, in the case of fever, produces delirium, the reason must be, that at the same time there is some cause which diminishes the energy of the brain, and prevents a free communication between the parts concerned in the intellectual functions. Upon the same principles, also, I suppose there is another species of delirium, depending more entirely on the diminished energy of the brain, and which may therefore arise when there is no unusual increase of the impetus of the blood in the vessels of the brain. Such seems to be the delirium occurring at the beginning of the cold stage of fevers, or in the hot stage of such fevers as shew strong marks of debility in the whole system.

46. Upon the whole, our doctrine of fever is explicitly this: the remote causes (36), are certain sedative powers applied to the nervous system, which, diminishing the energy of the brain, thereby produce a debility in the whole of the functions (35), and particularly in the action of the extreme vessels, (43, 44). Such, however, is at the same time, the nature of the animal economy (38), that this debility proves an indirect stimulus to the sanguiferous system; whence, by the intervention of the cold stage, and spasm connected with it (39, 40), the action of the heart and larger arteries is increased (40), and continues so (41), till it has had the effect of restoring the energy of the brain,

of extending this energy to the extreme vessels, of restoring therefore their action, and thereby especially overcoming the spasm affecting them; upon the removing of which, the excretion of sweat, and other marks of the relaxation of excretories, take place.

47. This doctrine will, as I suppose, serve to explain not only the nature of fever in general, but also the various cases of it which occur. Before proceeding, however, to this, it may be proper to point out the opinions, and, as I apprehend, the mistakes, which have formerly prevailed on this subject.

48. It has been supposed, that a lentor or viscidity prevailing in the mass of blood, and stagnating in the extreme vessels, is the cause of the cold stage of fevers and its consequences. But there is no evidence of any such viscidity, previously subsisting in the fluids; and, as it is very improbable that such a state of them can be very quickly produced, so the suddenness with which paroxysms come on, renders it more likely that the phenomena depend upon some cause acting upon the nervous system, or the primary moving powers of the animal economy. See Van Swieten apud Boerh. aph. 755.

49. Another opinion, which has been almost

universally received, is, that a noxious matter introduced into, or generated in, the body, is the proximate cause of fever; and that the increased action of the heart and arteries, which form so great a part of the disease, is an effort of the *vis medicatrix naturæ* to expel this morbific matter; and particularly to change or concoct it, so as to render it either altogether innocent, or, at least, fit for being more easily thrown out of the body. This doctrine, however, although of as great antiquity as any of the records of physic now remaining, and although it has been received by almost every school of medicine, yet appears to me to rest upon a very uncertain foundation. There are fevers produced by cold, fear, and other causes, accompanied with all the essential circumstances of fever, and terminating by sweat; but, at the same time, without any evidence or suspicion of morbific matter.

There have been fevers suddenly cured by a hemorrhagy, so moderate as could not carry out any considerable portion of a matter diffused over the whole mass of blood; nor can we conceive how the morbific matter could be collected or determined to pass by such an outlet as in that case is opened.

Even supposing a morbific matter were present, there is no explanation given in what manner the concoction of it is performed; nor is it shewn that any such change does in fact take place. In certain cases it is indeed evident, that a noxious matter is introduced into the body, and proves the cause of fever: but, even in these cases, it appears that the noxious matter is thrown out again, without having suffered any change; that the fever often terminates before the matter is expelled; and that, upon many occasions, without waiting the supposed time of concoction, the fever can be cured, and that by remedies which do not seem to operate upon the fluids, or to produce any evacuation.

50. While we thus reason against the notion of fever being an effort of nature, for concocting and expelling a morbific matter, I by no means intend to deny that the cause of fever frequently operates upon the fluids, and particularly produces a putrescent state of them. I acknowledge that this is frequently the case: but, at the same time, I maintain, that such a change of the fluids is not commonly the cause of fever; that very often it is an effect only; and that there is no reason to believe the termination of the fever to depend upon the expulsion of the putrid matter.

51. Another opinion which has prevailed, remains still to be mentioned. In intermittent fevers, a great quantity of bile is commonly thrown out by vomiting; and this is so frequently the case, that many have supposed an unusual quantity of

bile, and perhaps a peculiar quality of it, to be the cause of intermittent fevers. This, however, does not appear to be well founded. Vomiting, by whatever means excited, if often repeated, with violent straining, seems to be powerful in emulging the biliary ducts, and commonly throws out a great deal of bile. This will happen especially in the case of intermittent fevers: for, as in the state of debility and cold stage of these fevers, the blood is not propelled in the usual quantity into the extreme vessels, and particularly into those on the surface of the body, but is accumulated in the vessels of the internal parts, and particularly in the vena portarum; so this may occasion a more copious secretion of bile.

These considerations will, in some measure, account for the appearance of an unusual quantity of bile in intermittent fevers; but the circumstance which chiefly occasions the appearance of bile in these cases, is the influence of warm climates and seasons. These seldom fail to produce a state of the human body, in which the bile is disposed to pass off, by its secretories, in greater quantity than usual; and perhaps also changed in its quality, as appears from the disease of cholera, which so frequently occurs in warm seasons. At the same time, this disease occurs often without fever; and we shall hereafter render it sufficiently probable, that intermittent fevers, for the most part, arise from another cause, that is, from marsh effluvia;

while, on the other hand, there is no evidence of their arising from the state of the bile alone. The marsh effluvia, however, commonly operate most powerfully in the same season that produces the change and redundance of the bile; and therefore, considering the vomiting, and other circumstances of the intermittent fevers which here concur, it is not surprising that autumnal intermittents are so often attended with effusions of bile.

This view of the subject does not lead us to consider the state of the bile as the cause of intermittents, but merely as a circumstance accidentally concurring with them, from the state of the season in which they arise. What attention this requires in the conduct of the disease, I shall consider hereafter.

52. From this view of the principal hypotheses which have hitherto been maintained with respect to the proximate cause of fever, it will appear, that fevers do not arise from changes in the state of the fluids; but that, on the contrary, almost the whole of the phenomena of fevers lead us to believe, that they chiefly depend upon changes in the state of the moving powers of the animal system. Though we should not be able to explain all the circumstances of the disease, it is at least of some advantage to be led into the proper train of investigation. I have attempted to pursue it, and

shall now endeavour to apply the doctrine already delivered, towards explaining the diversity of fevers.

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## CHAP. III.

### OF THE DIFFERENCE OF FEVERS AND ITS CAUSES.

*53.* To ascertain the difference of fevers, I think it necessary to observe, in the first place, that every fever of more than one day's duration, consists of repeated, and in some measure separate, paroxysms; and that the difference of fevers taken notice of above, (from 25 to 30), appears to consist in the different state of paroxysms, and in the different circumstances of their repetition.

*54.* That fevers generally consist of distinct, and, in some measure, separately repeated, paroxysms, I have alleged above to be a matter of fact: but I shall here endeavour to confirm it, by assigning the cause.

*55.* In every fever, in which we can distinctly observe any number of separate paroxysms, we constantly find that each paroxysm is finished in less than twenty-four hours; but as I cannot perceive any thing in the cause of fevers determining to this, I must presume it to depend on some general law of the animal economy. Such a law seems to be that which subjects the economy, in many respects, to a diurnal revolution. Whether this depends upon the original conformation of the body, or upon certain powers constantly applied to it, and inducing a habit, I cannot positively determine: but the returns of sleep and watching, of appetites and excretions, and the changes which regularly occur in the state of the pulse, shew sufficiently, that in the human body a diurnal revolution takes place.

56. It is this diurnal revolution, which, I suppose, determines the duration of the paroxysms of fevers; and the constant and universal limitation of these paroxysms, (as observed in 55), while no other cause of it can be assigned, renders it sufficiently probable that their duration depends upon, and is determined by, the revolution mentioned. And that these paroxysms are connected with that diurnal revolution, appears further from this, that though the intervals of paroxysms, are different in different cases, yet the times of the accession of paroxysms are generally fixed to one time of the day; so that quotidians come on in the morning, tertians at noon, and quartans in the afternoon.

57. It remains to be remarked, that as quartans

and tertians are apt to become quotidians, these to pass into the state of remittents, and these last to become continued; and that even in the continued form, daily exacerbations and remissions are generally to be observed: so all this shews so much the power of diurnal revolution, that when, in certain cases, the daily exacerbations and remissions are with difficulty distinguished, we may still presume, that the general tendency of the economy prevails, that the disease still consists of repeated paroxysms, and, upon the whole, that there is no such disease as that which the schools have called a continued fever. I expect that this doctrine will be confirmed by what I shall say hereafter concerning the periodical movements observed in continued fevers.

58. It being thus proved, that every fever, of more than one day's duration, consists of repeated paroxysms; we, in the next place, remark, that the repetition of paroxysms depends upon the circumstances of the paroxysms which have already taken place. From what was observed in 30 and 31, it appears, that the longer paroxysms are protracted they are the sooner repeated; and, therefore, that the cause of the frequent repetition is to be sought for in the cause of the protraction of paroxysms.

59. Agreeably to what is laid down in 46, and

to the opinion of most part of physicians, I suppose, that, in every fever, there is a power applied to the body, which has a tendency to hurt and destroy it, and produces in it certain motions which deviate from the natural state; and, at the same time, in every fever which has its full course, I suppose, that in consequence of the constitution of the animal economy, there are certain motions excited which have a tendency to obviate the effects of the noxious power, or to correct and remove them. Both these kinds of motion are considered as constituting the disease.

But the former is perhaps strictly the morbid state, while the latter is to be considered as the operation of the *vis medicatrix naturæ*, of salutary tendency, and which I shall hereafter call the REACTION of the system.

60. Upon the supposition that these two states take place in every paroxysm of fever, it will appear to be chiefly in the time of the hot stage that the reaction operates in removing the morbid state; and therefore, as this operation succeeds more or less quickly, the hot stage of paroxysms will be shorter or longer. But as the length of paroxysm depends chiefly upon the duration of the hot stage, so the longer duration of this and of paroxysms, must be owing either to the obstinacy of resistance in the morbid state, or to the weakness of the salutary reaction; and it is probable, that some-

times the one, and sometimes the other of these circumstances, takes place.

61. It seems to be only by the state of the spasm, that we can judge of the resistance of the morbid state of fever: and with respect to this spasm, I observe, that either the cause exciting it may be different in different cases; or, though the cause should be the same in different persons, the different degree of irritability in each may give occasion to a greater or lesser degree of spasm; and therefore, the reaction in fever being given, the continuance of the hot stage, and of the whole paroxysm, may be longer or shorter, according to the degree of spasm that has been formed.

62. One cause of the obstinacy of spasm in fevers, may be clearly perceived. In inflammatory diseases there is a diathesis phlogistica prevailing in the body, and this diathesis we suppose to consist in an increased tone of the whole arterial system. When, therefore, this diathesis accompanies fever, as it sometimes does, it may be supposed to give occasion to the febrile spasms being formed more strongly, and thereby to produce more protracted paroxysms. Accordingly we find, that all inflammatory fevers are of the continued kind; and that all the causes of the diathesis phlogistica have a tendency to change intermittent into continued fevers. Continued fevers, then, being often at-

tended with the diathesis phlogistica, we conclude, that, in many cases, this is the cause of their continued form.

63. In many fevers, however, there is no evidence of any diathesis phlogistica being present, nor of any other cause of more considerable spasm; and, in such cases, therefore, we must impute the protraction of paroxysms, and the continued form of the fever, to the weakness of reaction. That *this* cause takes place, we conclude from hence, that, in many cases of fever, wherein the separate paroxysms are the longest protracted, and the most difficultly observed, we find the most considerable symptoms of a general debility; and therefore we infer, that in such cases, the protracted paroxysms, and continued form, depend upon a weaker reaction; owing either to the causes of debility applied having been of a more powerful kind, or from circumstances of the patient's constitution favouring their operation.

64. Upon these principles, we make a step towards explaining in general, with some probability, the difference of fevers; but must own, that there is much doubt and difficulty in applying the doctrine to particular cases. It applies tolerably well to explain the different states of intermittents, as they are more purely such, or as they approach more and more to the continued form: but seve-

ral difficulties still remain with respect to many circumstances of intermittents; and more still with respect to the difference of those continued fevers, which we have distinguished in our Nosology as different from intermittents, and as more especially entitled to the appellation of continued, (see Syn. Nos. Meth. part 5, ch. 1, sect. 2), and explained more fully above.

65. From the view given (63 and 64), of the causes of the protraction of paroxysms, and therefore of the form of continued fevers, strictly so called, it seems probable, that the remote causes of these operate by occasioning either a phlogistic diathesis, or a weaker reaction; for we can observe, that the most obvious difference of continued fevers depends upon the prevalence of one or other of these states.

66. Continued fevers have been accounted of great diversity; but physicians have not been successful in marking these differences, or in reducing them to any general heads. The distinctions made by the ancients are not well understood; and, so far as either they or the modern nosologists have distinguished continued fevers by a difference of duration, their distinctions are not well founded, and do not apply in such a manner as to be of any use. We think it agreeable to observation, and to the principles above laid down (63, 64), to

distinguish continued fevers according as they shew either an inflammatory irritation, or a weaker reaction.

67. This distinction is the same with that of fevers into the INFLAMMATORY and NERVOUS; the distinction at present most generally received in Britain. To the first, as a genus, I have given the name of Synochus; to the second, that of Typhus; and little studious whether these names be authorized by the ancient use of the same terms, I depend upon their being understood by the characters annexed to them in our nosology, which I apprehend to be founded on observation.

68. By these characters I think continued fevers may in practice be distinguished; and if that be the case, the principles above laid down will be confirmed.

69. Beside these differences of continued fevers now mentioned, I am not certain of having observed any other that can be considered as fundamental. But the most common form of continued fevers, in this climate, seems to be a combination of these two genera; and I have therefore given such a genus a place in our nosology, under the title of Synochus. At the same time, I think that the limits between the synochus and typhus will be with difficulty assigned; and I am disposed

to believe, that the synochus arises from the same cause as the typhus, and is therefore only a variety of it.

70. The typhus seems to be a genus comprehending several species. These, however, are not yet well ascertained by observation; and in the meantime we can perceive, that many of the different cases observed do not imply any specific difference, but seem to be merely varieties, arising from a different degree of power in the cause, from different circumstances of the climate or season in which they happen, or from different circumstances in the constitution of the persons affected.

71. Some of the effects arising from these circumstances require to be particularly explained.

One is, an unusual quantity of bile appearing in the course of the disease. This abundance of bile may possibly attend some continued fevers, strictly so called; but, for the reasons above explained, it more commonly attends intermittents, and, we believe, it might have been enumerated (29) among the marks distinguishing the latter kind of fevers from the former. But, though an unusual quantity of bile should appear with continued fevers, it is considered in this case, as in that of intermittents, to be a coincidence only, owing to the state of the season, and producing no different species or fundamental distinction, but merely a variety of the disease. I think it proper to observe here, that it is probable that the most part of the continued fevers named bilious, have been truly such as belong to the section of intermittents.

72. Another effect of the circumstances occasionally varying the appearance of typhus, is a putrescent state of the fluids. The ancients, and likewise the moderns, who are in general much disposed to follow the former, have distinguished fevers as putrid and non-putrid: but the notions of the ancients on this subject were not sufficiently correct to deserve much notice; and it is only of late that the matter has been more accurately observed, and better explained.

From the dissolved state of the blood, as it presents itself when drawn out of the veins, or as it appears from the red blood's being disposed to be effused and run off by various outlets, and from several other symptoms to be hereafter mentioned, I have now no doubt, how much soever it has been disputed by some ingenious men, that a putrescency of the fluids to a certain degree does really take place in many cases of fever. This putrescency, however, often attends intermittent, as well as continued, fevers; and, of the continued kind, both the synochus and typhus, and all of them in very different degrees; so that, whatever attention it may deserve in practice, there is no fixing such limits to it as to admit of establishing a species under the title of PUTRID.

73. Beside differing by the circumstances already mentioned, fevers differ also by their being accompanied with symptoms which belong to diseases of the other orders of pyrexiæ. This sometimes happens in such a manner, as to render it difficult to determine which of the two is the primary disease. Commonly, however, it may be ascertained by the knowledge of the remote cause, and of the prevailing epidemic, or by observing the series and succession of symptoms.

74. Most of our systems of physic have marked, as a primary one, a species of fever under the title of HECTIC; but, as it is described, I have never seen it as a primary disease. I have constantly found it as a symptom of some topical affection, most commonly of an internal suppuration; and as such it shall be considered in another place.

75. The distinction of the several cases of intermittent fever I have not prosecuted here; both because we cannot assign the causes of the differences which appear, and because I apprehend that

the differences which in fact occur may be readily understood from what is said above (25, 26, and 27), and more fully from our Methodical Nosology, Cl. 1, sect. 1.

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## CHAP. IV.

### OF THE REMOTE CAUSES OF FEVER.

76. As fever has been held to consist chiefly in an increased action of the heart and arteries, physicians have supposed its remote causes to be certain direct stimulants fitted to produce this increased action. In many cases, however, there is no evidence of such stimulants being applied; and, in those in which they are applied, they either produce only a temporary frequency of the pulse, which cannot be considered as a disease; or, if they do produce a permanent febrile state, it is by the intervention of a topical inflammation, which produces a disease different from what is strictly called fever (8).

77. That direct stimulants are the remote causes of fever, seems farther improbable; because the supposition does not account for the phenomena attending the accession of fevers, and because other

remote causes can with greater certainty be assigned.

78. As fevers are so generally epidemic, it is probable, that some matter floating in the atmosphere, and applied to the bodies of men, ought to be considered as the remote cause of fevers: and these matters present in the atmosphere, and thus acting upon men, may be considered, either as CONTAGIONS, that is, effluvia arising directly or originally from the body of a man under a particular disease, and exciting the same kind of disease in the body of the person to whom they are applied; or MIASMATA, that is, effluvia arising from other substances than the bodies of men, producing a disease in the person to whom they are applied.

79. Contagions have been supposed to be of great variety; and it is possible this may be the case: but that they truly are so, does not appear clearly from any thing we know at present. The genera and species of contagious diseases, of the class of pyrexiæ, at present known, are in number not very great. They chiefly belong to the order of fevers, to that of exanthemata, or that of profluvia. Whether there be any belonging to the order of phlegmasiæ, is doubtful; and though there should, it will not much increase the number of contagious pyrexiæ. Of the contagious exanthe-

mata and profluvia, the number of species is nearly ascertained; and each of them is so far of a determined nature, that though they have now been observed and distinguished for many ages, and in many different parts of the world, they have been always found to retain the same general character, and to differ only in circumstances, that may be imputed to season, climate, and other external causes, or to the peculiar constitutions of the several persons affected. It seems, therefore, probable, that, in each of these species, the contagion is of one specific nature; and that the number of contagious exanthemata or profluvia is hardly greater than the number of species enumerated in the systems of nosology.

80. If, while the contagious exanthemata and profluvia are thus limited, we should suppose the contagious pyrexiæ to be still of great and unlimited variety, it must be with respect to the genera and species of continued fevers. But if I be right in limiting, as I have done, the genera of these fevers (67-70), it will appear likely that the contagions which produce them are not of great variety; and this will be much confirmed, if we can render it probable that there is one principal, perhaps one common source of such contagions.

81. To this purpose it is now well known, that

the effluvia constantly arising from the living human body, if long retained in the same place, without being diffused in the atmosphere, acquire a singular virulence; and, in that state being applied to the bodies of men, become the cause of a fever which is highly contagious.

The existence of such a cause is fully proved by the late observations on jail and hospital fevers: and that the same virulent matter may be produced in many other places, must be sufficiently obvious: and it is probable, that the contagion arising in this manner, is not, like many other contagions, permanent and constantly existing; but that, in the circumstances mentioned, it is occasionally generated. At the same time, the nature of the fevers from thence, upon different occasions, arising, renders it probable, that the virulent state of human effluvia is the common cause of them, as they differ only in a state of their symptoms; which may be imputed to the circumstances of season, climate, &c. concurring with the contagion, and modifying its force.

82. With respect to these contagions, though we have spoken of them as of a matter floating in the atmosphere, it is proper to observe, that they are never found to act but when they are near to the sources from whence they arise; that is, either near to the bodies of men, from which they immediately issue; or near to some substances which,

as having been near to the bodies of men, are imbued with their effluvia, and in which substances these effluvia are sometimes retained in an active state for a very long time.

The substances thus imbued with an active and infectious matter, may be called *fomites;* and it appears to me probable, that contagions, as they arise from fomites, are more powerful than as they arise immediately from the human body.

83. Miasmata are next to be considered. These may arise from various sources, and be of different kinds; but we know little of their variety, or of their several effects. We know with certainty only one species of miasma, which can be considered as the cause of fever; and, from the universality of this, it may be doubted if there be any other.

84. The miasma, so universally the cause of fever, is that which arises from marshes or moist ground, acted upon by heat. So many observations have now been made with respect to this in so many different regions of the earth, that there is neither any doubt of its being in general a cause of fevers, nor of its being very universally the cause of intermittent fevers, in all their different forms. The similarity of the climate, season, and soil, in the different countries in which intermittents arise, and the similarity of the diseases, though arising in different regions, concur in proving, that

there is one common cause of these diseases, and that this is the marsh miasma.

What is the particular nature of this miasma, we know not; nor do we certainly know whether or not it differs in kind: but it is probable that it does not; and that it varies only in the degree of its power, or perhaps as to its quantity, in a given space.

85. It has been now rendered probable, that the remote causes of fevers (8), are chiefly contagions or miasmata, and neither of them of great variety. We have supposed that miasmata are the cause of intermittents, and contagions the cause of continued fevers, strictly so named; but we cannot with propriety employ these general terms. For, as the cause of continued fevers may arise from fomites, and may, in such cases, be called a miasma; and as other miasmata also may produce contagious diseases, it will be proper to distinguish the causes of fevers, by using the terms *human* or *marsh effluvia*, rather than the general ones of contagion or miasma.

86. To render our doctrine of fever consistent and complete, it is necessary to add here, that those remote causes of fever, human and marsh effluvia, seem to be of a debilitating or sedative quality. They arise from a putrescent matter. Their production is favoured, and their power in-

creased, by circumstances which favour putrefaction, and they often prove putrefactive ferments with respect to the animal fluids. As putrid matter, therefore, is always, with respect to animal bodies, a powerful sedative, so it can hardly be doubted, that human and marsh effluvia are of the same quality; and it is confirmed by this, that the debility which is always induced, seems to be in proportion to the other marks that appear of the power of those causes.

87. Though we have endeavoured to shew that fevers generally arise from marsh or human effluvia, we cannot, with any certainty, exclude some other remote causes, which are commonly supposed to have at least a share in producing those diseases. And I proceed, therefore, to inquire concerning these causes; the first of which that merits attention, is the power of cold applied to the human body.

88. The operation of cold on a living body, is so different in different circumstances, as to be of difficult explanation; it is here, therefore, attempted with some diffidence.

The power of cold may be considered as absolute or relative.

The *absolute* power is that by which it can diminish the temperature of the body to which it is applied. And thus, if the natural temperature of the human body is, as we suppose it to be, that of 98 degrees of Fahrenheit's thermometer;* every degree of temperature less than that, may be considered as cold with respect to the human body; and, in proportion to its degree, will have a tendency to diminish the temperature of the body. But as the living human body has in itself a power of generating heat, so it can sustain its own proper heat to the degree above mentioned, though surrounded by air or other bodies of a lower temperature than itself; and it appears from observation, that, in this climate, air, or other bodies applied to the living man, do not diminish the temperature of his body, unless the temperature of the bodies applied be below 62 degrees. From hence it appears, that the absolute power of cold in this climate, does not act upon the living human body, unless the cold applied be below the degree just now mentioned.

It appears also, that the human body's being surrounded by air of a lower temperature than itself, is necessary to its being retained in its proper temperature of 98 degrees: for, in this climate, every temperature of the air above 62 degrees, applied to the human body, though still of a lower temperature than itself, is found to increase the heat of it. And from all this it appears, that the absolute power of cold with respect to the human body, is very different from what it is with respect to inanimate bodies.

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* In every instance of our mentioning degrees of heat or cold, we shall mention them by the degrees in Fahrenheit's scale; and the expression of higher or lower shall always be according to that scale.

89. The *relative* power of cold with respect to the living human body, is that power by which it produces a sensation of cold in it; and with respect to this, it is agreeable to the general principle of sensation, that the sensation produced is not in proportion to the absolute force of impression, but according as the new impression is stronger or weaker than that which had been applied immediately before. Accordingly, with respect to the temperature, the sensation produced by any degree of this, depends upon the temperature to which the body had been immediately before exposed; so that whatever is higher than this feels warm, and whatever is lower than it feels cold; and it will therefore happen, that the opposite sensations of heat and cold, may, on different occasions, arise from the same temperature, as marked by the thermometer.

With respect to this, however, it is to be observed, that though every change of temperature gives a sensation of cold or heat, as it is lower or higher than the temperature applied immediately before, the sensation produced is in different cases of different duration. If the temperature at any time applied is under 62 degrees, every increase of temperature applied will give a sensation of heat; but if the increase of temperature does not arise to 62 degrees, the sensation produced will not continue long, but be soon changed to a sensation of cold. In like manner, any temperature applied to the human body, lower than that of the body itself, gives a sensation of cold; but if the temperature applied does not go below 62 degrees, the sensation of cold will not continue long, but be soon changed to a sensation of heat.

It will appear hereafter, that the effects of the sensation of cold will be very different, according as it is more permanent or transitory.

90. Having thus explained the operation of cold as absolute or relative with respect to the human body, I proceed to mention the general effects of cold upon it.

1. Cold, in certain circumstances, has manifestly a *sedative* power. It can extinguish the vital principle entirely, either in particular parts, or in the whole body; and considering how much the vital principle of animals depends upon heat, it cannot be doubted that the power of cold is always more or less directly sedative.

This effect may be said to take place from every degree of absolute cold; and, when the heat of the body has upon any occasion been preternaturally increased, every lower temperature may be useful in diminishing the activity of the system;

but it cannot diminish the natural vigour of the vital principle, till the cold applied is under 62 degrees; nor even then will it have this effect, unless the cold applied be of an intense degree, or be applied for some length of time to a large portion of the body.

2. It is equally manifest, that, in certain circumstances, cold proves a *stimulus* to the living body, and particularly to the sanguiferous system.

It is probable, that this effect takes place in every case in which the temperature applied produces a sensation of cold; and this, therefore, as depending entirely on the relative power of cold, will be in proportion to the change of temperature that takes place.

It appears to me probable, that every change of temperature, from a higher to a lower degree, will prove more or less stimulant; excepting when the cold applied is so intense, as immediately to extinguish the vital principle in the part.

3, Beside the sedative and stimulant powers of cold, it is manifestly also a powerful *astringent*, causing a contraction of the vessels on the surface of the body, and thereby producing a paleness of the skin, and a suppression of perspiration; and it seems to have similar effects when applied to internal parts. It is likewise probable, that this constriction, as it takes place especially in consequence of the sensibility of the parts to which the cold is applied, will in some measure be communicated to other parts of the body; and that thereby the application of the cold proves a *tonic* power with respect to the whole system.

These effects of tonic and astringent power seem to take place both from the absolute and relative power of cold; and therefore every application of it which gives a sensation of cold, is, in its first effect, both astringent and stimulant, though the former may be often prevented from being either considerable or permanent, when the latter immediately takes place.

91. It will be obvious, that these several effects of cold cannot all take place at the same time, but may in succession be variously combined. The stimulant power taking place obviates the effects, at least the permanency of the effects, that might otherwise have arisen from the sedative power. That the same stimulant power prevents these from the astringent, I have said above; but the stimulant and tonic powers of cold are commonly, perhaps always, conjoined.

92. These general effects of cold now pointed out, are sometimes salutary, and frequently morbid; but it is the latter only I am to consider here, and they seem to be chiefly the following.

1. A general inflammatory disposition of the system, which is commonly accompanied with rheumatism or other phlegmasiæ.

2. The same inflammatory disposition accompanied with catarrh.

3. A gangrene of particular parts.
4. A palsy of a single member.
5. A fever, or fever strictly so called, (8), which it often produces by its own power alone; but more commonly it is only an exciting cause of fever, by concurring with the operation of human or marsh effluvia.

93. Cold is often applied to the human body without producing any of these morbid effects, and it is difficult to determine in what circumstances it especially operates in producing them. It appears to me, that the morbid effects of cold depend partly upon certain circumstances of the cold itself, and partly on certain circumstances of the person to whom it is applied.

94. The circumstances of the cold applied, which seem to give it effect, are, 1, The intensity or degree of the cold; 2, the length of time during which it is applied; 3, the degree of moisture at the same time accompanying it; 4, Its being applied by a wind or current of air; 5, Its being a vicissitude, or sudden and considerable change of temperature, from heat to cold.

95. The circumstances of persons rendering them more liable to be affected by cold, seem to be, 1, the weakness of the system, and particularly the lessened vigour of the circulation, occa-

sioned by fasting, by evacuations, by fatigue, by a last night's debauch, by excess in venery, by long watching, by much study, by rest immediately after great exercise, by sleep, and by preceding disease; 2, The body, or its parts, being deprived of their accustomed coverings; 3, One part of the body being exposed to cold, while the rest is kept in its usual or a greater warmth.

96. The power of these circumstances (95) is demonstrated by the circumstances enabling persons to resist cold. These are, a certain vigour of constitution, exercise of the body, the presence of active passions, and the use of cordials.

Besides these, there are other circumstances which, by a different operation, enable persons to resist cold acting as a sensation, such as, passions engaging a close attention to one object, the use of narcotics, and that state of the body in which sensibility is greatly diminished, as in maniacs. To all which is to be added, the power of habit with respect to those parts of the body to which cold is more constantly applied, which both diminishes sensibility, and increases the power of the activity generating heat.

97. Beside cold, there are other powers that seem to be remote causes of fever; such as fear, intemperance in drinking, excess in venery, and other circumstances, which evidently weaken the

system. But whether any of these sedative powers be alone the remote cause of fever, or if they only operate either as concurring with the operation of marsh or human effluvia, or as giving an opportunity to the operation of cold, are questions not to be positively answered: they may possibly of themselves produce fever; but most frequently they operate as concurring in one or other of the ways above mentioned.

98. Having now mentioned the chief of the remote causes of fevers, it may be further observed, that these will arise more or less readily, according as miasmata and contagions are more or less prevailing and powerful, or as these are more or less favoured by the concurrence of cold and other sedative powers.

## CHAP. V.

### OF THE PROGNOSIS OF FEVERS.

99. As fevers (by 60) consist of both morbid and salutary motions and symptoms, the tendency of the disease to a happy or fatal issue, or the prognostic in fevers, has been established by marking

the prevalence of the morbid or of the salutary symptoms; and it might be properly so established, if we could certainly distinguish between the one and the other of these kinds of symptoms: but the operation of the reaction, or salutary efforts of nature, in curing fevers, is still involved in so much obscurity, that I cannot explain the several symptoms of it so clearly as to apply them to the establishing prognostics; and this, I think, may be done better by marking the morbid symptoms which shew the tendency to death in fevers.

100. This plan of the prognostics in fevers must proceed upon our knowledge of the causes of death in general, and in fevers more particularly.

The causes of death, in general, are either direct or indirect.

The first are those which directly attack and destroy the vital principle, as lodged in the nervous system, or destroy the organization of the brain immediately necessary to the action of that principle.

The second or the indirect causes of death, are those which interrupt such functions as are necessary to the circulation of the blood, and thereby necessary to the due continuance and support of the vital principle.

101. Of these general causes, those which operate more particularly in fevers seem to be, *first*,

The *violence of reaction;* which either, by repeated violent excitements, destroys the vital power itself; or, by its violence, destroys the organization of the brain necessary to the action of that power; or, by the same violence, destroys the organization of the parts more immediately necessary to the circulation of the blood.

*Secondly*, The cause of death in fevers may be a *poison*, that is, a power capable of destroying the vital principle; and this poison may be either the miasma or contagion which was the remote cause of the fever, or it may be a putrid matter generated in the course of the fever. In both cases, the operation of such a power appears either as acting chiefly on the nervous system, inducing the symptoms of debility; or as acting upon the fluids of the body, inducing a putrescent state in them.

102. From all this it appears, that the symptoms shewing the tendency to death in fevers, may be discovered by their being either the symptoms

Of *violent reaction;*

Of *great debility;*

Or, of *a strong tendency to putrefaction in the fluids.*

And, upon this supposition, I proceed now to mark those symptoms more particularly.

103. The symptoms which denote the *violence*

*of reaction*, are 1, The increased force, hardness, and frequency, of the pulse. 2, The increased heat of the body. 3, The symptoms which are the marks of a general inflammatory diathesis, and more especially of a particular determination to the brain, lungs, or other important viscera. 4, The symptoms which are the marks of the cause of violent reaction; that is, of a strong stimulus applied, or of a strong spasm formed, the latter appearing in a considerable suppression of the excretions.

104. The symptoms which denote *a great degree of debility*, are,

In the ANIMAL FUNCTIONS: 1, The weakness of the voluntary motions; 2, the irregularity of the voluntary motions, depending on their debility; 3, the weakness of sensation; 4, the weakness and irregularity of the intellectual operations.

In the VITAL FUNCTIONS: 1, The weakness of the pulse; 2, the coldness or shrinking of the extremities; 3, the tendency to a *deliquium animi* in an erect posture; 4, the weakness of respiration.

In the NATURAL FUNCTIONS: 1, The weakness of the stomach, as appearing in anorexia, nausea, and vomiting; 2, involuntary excretions, depending upon a palsy of the sphincters; 3, difficult deglutition, depending upon a palsy of the muscles of the fauces.

105. *Lastly*, The symptoms denoting *the putrescent state of the fluids*, are,

1, With respect to the stomach; the loathing of animal food, nausea, and vomiting, great thirst, and a desire of acids.

2, With respect to the fluids: 1, The blood drawn out of the veins not coagulating as usual; 2, hemorrhagy from different parts, without marks of increased impetus; 3, effusions under the skin or cuticle, forming petechiæ, maculæ, and vibices; 4, effusions of a yellow serum under the cuticle.

3, With respect to the state of the excretions; fetid breath, frequent, loose, and fetid stools, high-coloured turbid urine, fetid sweats, and the fetor and livid colour of blistered places.

4, The cadaverous smell of the whole body.

106. These several symptoms have very often, each of them singly, a share in determining the prognostic; but more especially by their concurrence and combination with one anothor, particularly those of debility with those of putrescency.

107. On the subject of the prognostic, it is proper to observe, that many physicians have been of opinion, there is something in the nature of fevers which generally determines them to be of a certain duration; and therefore that their terminations, whether salutary or fatal, happen at certain periods of the disease rather than at others.

These periods are called the CRITICAL DAYS; carefully marked by Hippocrates and other ancient physicians, as well as by many moderns of the greatest eminence in practice; while at the same time many other moderns, of no inconsiderable authority, deny their taking place in the fevers of these northern regions which we inhabit.

108. I am of opinion, that the doctrine of the ancients, and particularly that of Hippocrates, on this subject, was well founded; and that it is applicable to the fevers of our climate.

109. I am of this opinion, *first*, because I observe, that the animal economy, both from its own constitution, and from habits which are easily produced in it, is readily subjected to periodical movements; *secondly*, because, in the diseases of the human body, I observe periodical movements to take place with great constancy and exactness; as in the case of intermittent fevers, and many other diseases.

110. These considerations render it probable, that exact periodical movements may take place in continued fevers; and I think there is evidence of such movements actually taking place.

111. The critical days, or those on which we suppose the termination of continued fevers espe-

cially to happen, are, the *third*, *fifth*, *seventh*, *ninth*, *eleventh*, *fourteenth*, *seventeenth*, and *twentieth*. We mark none beyond this last; because, though fevers are sometimes protracted beyond this period, it is, however, more rarely; so that there are not a sufficient number of observations to ascertain the course of them; and further, because it is probable that, in fevers long protracted, the movements become less exact and regular, and therefore less easily observed.

112. That the days now mentioned are the critical days, seems to be proved by the particular facts which are found in the writings of Hippocrates. From these facts, as collected from the several writings of that author by *M. De Haen*, it appears, that of one hundred and sixty-three instances of the termination of fevers, which happened on one or other of the first twenty days of the disease, there are one hundred and seven, or more than two thirds of the whole number, which happened on one or other of the eight days above mentioned; that none happened on the second or thirteenth day; and upon the eighth, tenth, twelfth, fifteenth, sixteenth, eighteenth, and nineteenth, there are but eighteen instances of termination, or one ninth of the whole.

113. As the terminations which happen on the seven days last mentioned, are, upon the whole,

few; and, upon any one of them, fewer than those which happen on any of our supposed critical days: so there are therefore nine days which may be called NON-CRITICAL; while, on the other hand, the many terminations which happened on the seventh, fourteenth, and twentieth days, afford a proof both of critical days in general, and that these are the chief of them. Hereafter I shall mention an analogy that renders the power of the other critical days sufficiently probable.

114. It appears farther, that as, of the terminations which were final and salutary, not a tenth part happened on the non-critical days; and of the terminations which were final and fatal, though the greater number happened on the critical days, yet above a third of them happened on the non-critical; so it would appear, that the tendency of the animal economy is to observe the critical days, and that it is by the operation of some violent and irregular cause that the course of things is sometimes turned to the non-critical.

115. What has been said, gives sufficient ground for presuming, that it is the general tendency of the animal economy to determine the periodical movements in fevers to be chiefly on the critical days. At the same time, we must acknowledge it to be a general tendency only; and that, in particular cases, many circumstances may occur to

disturb the regular course of it. Thus, though the chief and more remarkable exacerbations in continued fevers happen on the critical days, there are truly exacerbations happening every day; and these, from certain causes, may become considerable and critical. Further, though intermittent fevers are certainly very strongly determined to observe a tertian or quartan period, we know there are circumstances which prevent them from observing these periods exactly, and which render them either anticipating or postponing so much, that the days of paroxysms come to be quite changed; and it is allowable to suppose, that the like may happen with respect to the exacerbations of continued fevers, so as thereby to disturb the regular appearance of critical days.

A particular instance of this occurs with respect to the sixth day of fevers. In the writings of Hippocrates, there are many instances of terminations happening on the sixth day; but it is not therefore reckoned among the critical days; for, of the terminations happening on that day, there is not one which proves finally of a salutary kind; the greater number are fatal; and all the rest are imperfect, and followed with a relapse. All this shews, that some violent cause had, in these cases, produced a deviation from the ordinary course of nature; that the terminations on the sixth day are nothing more than anticipations of the seventh, and therefore a proof of the power of this last.

116. The doctrine of critical days has been much embarrassed by some dissonant accounts of it, which appear in the writings imputed to Hippocrates. But this may be justly accounted for from these writings being truly the works of different persons, and from the most genuine of them having suffered many corruptions; so that, in short, every thing which is inconsistent with the facts above laid down may be ascribed to one or other of these causes.

117. This, further, has especially disturbed the doctrine of critical days, that Hippocrates himself attempted, perhaps too hastily, to establish general rules, and to bring the doctrine to a general theory, drawn from Pythagorian opinions concerning the power of numbers. It is this which seems to have produced the idea of odd days, and of a quaternary and septenary period; doctrines which appear so often in the writings of Hippocrates. These, however, are inconsistent with the facts above laid down; and indeed, as Asclepiades and Celsus had observed, are inconsistent with one another.

118. Upon the whole, therefore, it is apprehended, that the critical days above assigned, are truly the critical days of Hippocrates, and may be consistently explained in the following manner.

119. From the universality of tertian or quartan periods in intermittent fevers, we cannot doubt of their being, in the animal economy, a tendency to observe such periods; and the critical days above mentioned are consistent with this tendency of the economy, as all of them mark either tertian or quartan periods. These periods, however, are not promiscuously mixed, but occupy constantly their several portions in the progress of the disease; so that, from the beginning to the eleventh day, a tertian period takes place; and, from the eleventh to the twentieth, and perhaps longer, a quartan period is as steadily observed.

120. What determines the periods to be changed about the eleventh day, we have not clearly perceived; but the fact is certain: for there is no instance of any termination on the thirteenth, that is, the tertian period next following the eleventh; whereas, upon the fourteenth, seventeenth, and twentieth, which mark quartan periods, there are forty-three instances of terminations, and six only on all the intermediate days between these.

This prevalence of a quartan period leaves no room for doubting that the twentieth, and not the twenty first, is the critical day marked by Hippocrates, though the last is mentioned as such in the common edition of the aphorisms, taken from an erroneous manuscript, which Celsus also seems to have copied.

121. A consistency with the general tendency of the system, renders the series of critical days we have mentioned probably the true one; and the only remaining difficulty in finding what we have delivered to be the same with the genuine doctrine of Hippocrates, is the frequent mention of the fourth as a critical day.

It is true, there are more instances of terminations happening on this day, than on some of those days we have asserted to be truly critical: but its inconsistency with the more general tendency, and some other considerations, lead us to deny its being naturally a critical day; and to think, that the instances of terminations, which have really occurred on the fourth day, are to be reckoned among the other irregularities that happen in this matter.

122. I have thus endeavoured to support the doctrine of critical days, chiefly upon the particular facts to be found in the writings of Hippocrates: and although I might also produce many other testimonies of both ancient and modern times; yet it must be owned, that some of these testimonies may be suspected to have arisen rather from a veneration of Hippocrates, than from accurate observation.

123. With respect to the opinions of many moderns, who deny the prevalence of critical days,

they are to be little regarded: for the observation of the course of continued fevers is known to be difficult and fallacious; and therefore the regularity of that course may have often escaped inattentive and prejudiced observers.

124. Our own observations amount to this; that fevers with moderate symptoms, generally cases of the synocha, frequently terminate in nine days, or sooner, and very constantly upon one or other of the critical days which fall within that period: but it is very rare, in this climate, that cases of either the typhus or synochus terminate before the eleventh day, and when they do terminate on this day, it is for the most part fatally. When they are protracted beyond this time, I have very constantly found, that their terminations were upon the fourteenth, seventeenth, or twentieth day.

In such cases, the salutary terminations are seldom attended with any considerable evacuation. A sweating frequently appears, but is seldom considerable; and I have hardly ever observed critical and decisive terminations attended with vomiting, evacuations by stool, or remarkable changes in the urine. The solution of the disease is chiefly to be discerned from some return of sleep and appetite, the ceasing of delirium, and an abatement of the frequency of the pulse. By these symptoms we can often mark a crisis of the disease: but it seldom happens suddenly and entirely; and it is most commonly from some favourable symptoms occurring upon one critical day, that we can announce a more entire solution upon the next following.

Upon the whole, I am persuaded, that, if observations shall be made with attention, and without prejudice, I shall be allowed to conclude with the words of the learned and sagacious Gaubius, 'Fallor, ni sua constiterit HIPPOCRATI auctoritas, 'GALENO fides, NATURÆ virtus et ordo.'

# CHAP. VI.

## OF THE METHOD OF CURE IN FEVERS.

### SECT. I.

### *Of the cure of continued fevers.*

125. As it is allowed, that, in every fever which has its full course, there is an effort of nature of a salutary tendency, it might be supposed that the cure of fevers should be left to the operations of nature, or that our art should be only directed to support and regulate these operations, and that we should form our indications accordingly. This plan, however, I cannot adopt, because the operations of nature are very precarious, and not so

well understood as to enable us to regulate them properly. It appears to me, that trusting to these operations has often given occasion to a negligent and inert practice; and there is reason to believe, that an attention to the operations of nature may be often superseded by art.

126. The plan which to me appears to be most suitable, is that which forms the indications of cure upon the view of obviating the tendency to death; while, at the same time, the means of executing these indications are directed by a proper attention to the proximate cause of fevers.

Upon this plan, in consequence of what has been laid down above on the subject of the prognostic, we form three general indications in the cure of continued fevers; and the one or other of these is to be employed according as the circumstances of the fever (102), shall direct.

The first, therefore, is *to moderate the violence of reaction.*

The second is, *to remove the causes, or obviate the effects of debility.* And,

The third is, *to obviate or correct the tendency of the fluids to putrefaction.*

127. The first indication may be answered, that is, the violence of reaction may be moderated,

1, By all those means which diminish the action of the heart and arteries.

2, By those means which take off the spasm of the extreme vessels, which we suppose to be the chief cause of violent reaction.

128. The action of the heart and arteries may be diminished,

1, By avoiding or moderating those irritations, which, in one degree or other, are almost constantly applied to the body;

2, By the use of certain sedative powers;

3, By diminishing the tension and tone of the arterial system.

129. The irritations (128, 1) almost constantly applied, are the impressions made upon our senses; the exercise of the body and mind; and the taking in of aliments. The avoiding these as much as possible, or the moderating their force constitute what is rightly called the ANTIPHLOGISTIC REGIMEN, proper to be employed in almost every continued fever.

130. The conduct of this regimen is to be directed by the following rules and considerations.

1, Impressions on the external senses, as being stimulant to the system, and a chief support of its activity, should be avoided as much as possible; those especially of more constant application, those of a stronger kind, and those which give pain and uneasiness.

No impression is to be more carefully guarded against than that of external heat; while, at the same time, every other means of increasing the heat of the body is to be shunned. Both these precautions are to be observed as soon as a hot stage is fully formed, and to be attended to during its continuance; excepting in certain cases, where a determination to sweating is necessary, or where the stimulant effects of heat may be compensated by circumstances which determine it to produce a relaxation and revulsion.

2, All motion of the body is to be avoided, especially that which requires the exercise of its own muscles; and that posture of the body is to be chosen which employs the fewest muscles, and which keeps none of them long in a state of contraction. Speaking, as it accelerates respiration, is particularly to be refrained from.

It is to be observed, that every motion of the body is the more stimulant in proportion as the body is weaker.

3, The exercise of the mind also is a stimulus to the body; so that all impressions which lead to thought, and those especially which may excite emotion or passion, are to be carefully shunned.

With respect to avoiding impressions of all kinds, an exception is to be made in the case of a delirium coming on, when the presenting of accustomed objects may have the effect of interrupting and diverting the irregular train of ideas then arising in the mind.

4. The presence of recent aliment in the stomach always proves a stimulus to the system, and ought therefore to be as moderate as possible. A total abstinence for some time may be of service; but as this cannot be long continued with safety, we must avoid the stimulus of aliment, by choosing that kind which gives the least. We suppose that alimentary matters are more stimulant according as they are more alkalescent; and this leads to avoid all animal, and to use vegetable food only.

As our drinks also may prove stimulant, so all aromatic and spirituous liquors are to be avoided; and, in answering the present indication, all fermented liquors, excepting those of the lowest quality, are to be abstained from.

131. Beside these stimulant powers more constantly applied, there are others which, although occasional only, yet as commonly accompanying fevers, must be attended to and removed.

One is, the sense of thirst, which, as a powerful stimulus, ought always, in one way or other, to be removed.

Another stimulus frequently arises from crudities, or corrupted humours, in the stomach; and it is to be removed by vomiting, by dilution, or by the use of acids.

A third stimulus often arises from the preternatural retention of feces in the intestines; and ought to be removed by frequent laxative glysters.

A fourth stimulus to be constantly suspected in fevers, is a general acrimony of the fluids, as produced by the increase of motion and heat, joined with an interruption of the excretions. This acrimony is to be obviated or removed by the taking in of large quantities of mild antiseptic liquors.

132. The avoiding of irritation in all these particulars, (130 and 131), constitutes the antiphlogistic regimen absolutely necessary for moderating the violence of reaction, and, if I mistake not, is proper in almost every circumstance of continued fevers; because the propriety and safety of employing stimulants is often uncertain; and because several of those above mentioned, beside their stimulant powers, have other qualities by which they may be hurtful.

It appears to me, that the supposed utility of stimulants, in certain cases of fever, has often arisen from a mistake in having ascribed to their stimulant what really depended upon their antispasmodic power.

133. A second head of the means (128, 2) for moderating the violence of reaction, comprehends certain sedative powers, which may be employed to diminish the activity of the whole body, and particularly that of the sanguiferous system.

The *first* of these to be mentioned is the application of cold.

Heat is the chief support of the activity of the animal system; which is therefore provided in itself with a power of generating heat. But, at the same time, we observe, that this would go to excess, were it not constantly moderated by a cooler temperature in the surrounding atmosphere. When, therefore, that power of the system generating heat is increased, as is commonly the case in fevers, it is necessary not only to avoid all means of increasing it further, but it seems proper also to apply air of a cooler temperature; or at least to apply it more entirely and freely, than in a state of health.

Some late experiments in the small-pox, and in continued fevers, shew that the free admission of cool air to the body is a powerful remedy in moderating the violence of reaction; but what is the mode of its operation, to what circumstances of fever it is peculiarly adapted, or what limitations it requires, I shall not venture to determine, till more particularly instructed by further experience.

134. A *second* sedative power which may be employed in fevers, is that of certain medicines, known in the writings on the materia medica under the title of REFRIGERANTS.

The chief of these are acids of all kinds, when sufficiently diluted; and they are, in several respects; remedies adapted to continued fevers. Those especially in use are, the vitriolic and vegetable; and, on many accounts, we prefer the latter.

135. Another set of refrigerants are, the neutral salts, formed of the vitriolic, nitrous, or vegetable acids; with alkalines, either fixed or volatile. All these neutrals, while they are dissolving in water, generate cold; but as that cold ceases soon after the solution is finished, and as the salts are generally exhibited in a dissolved state, their refrigerant power in the animal body does not at all depend upon their power of generating cold with water. The neutral chiefly employed as a refrigerant, is nitre; but all the others, compounded as above mentioned, partake more or less of the same quality.

136. Beside these neutrals, some metallic salts also have been employed as refrigerants in fevers; and particularly the sugar of lead. But the refrigerant powers of this are not well ascertained; and its deleterious qualities are too well known to admit of its being freely used.

137. Under the *third* general head (128, 3) of the means to be employed for moderating the violence of reaction, are comprehended the several means of diminishing the tension, tone, and activity of the sanguiferous system. As the activity

of this system depends, in a great measure, upon the tone, and this again upon the tension of the vessels, given to them by the quantity of fluids they contain, it is evident, that the diminution of the quantity of these must diminish the activity of the sanguiferous system.

138. The quantity of fluids contained in the sanguiferous system, may be diminished most conveniently by the evacuations of blood-letting and purging.

139. Nothing is more evident than that blood-letting is one of the most powerful means of diminishing the activity of the whole body, especially of the sanguiferous system; and it must therefore be the most effectual means of moderating the violence of reaction in fevers. Taking this as a fact, I omit inquiring into its mode of operation, and shall only consider in what circumstance of fevers it may be most properly employed.

140. When the violence of reaction, and its constant attendant, a phlogistic diathesis, are sufficiently manifest; when these constitute the principal part of the disease, and may be expected to continue throughout the whole of it, as in the cases of *synocha;* then blood-letting is the principal remedy, and may be employed as far as the symptoms of the disease may seem to require, and the consti-

tution of the patient will bear. It is, however, to be attended to, that a greater evacuation than is necessary, may occasion a slower recovery, may render the person more liable to a relapse, or may bring on other diseases.

141. In the case of *synocha*, therefore, there is little doubt about the propriety of blood-letting; but there are other species of fever, as the *synochus*, in which a violent reaction and phlogistic diathesis appear, and prevail during some part of the course of the disease; while, at the same time, these circumstances do not constitute the principal part of the disease, nor are to be expected to continue during the whole course of it; and it is well known, that, in many cases, the state of violent reaction is to be succeeded, sooner or later, by a state of debility, from the excess of which the danger of the disease is chiefly to arise. It is therefore necessary, that, in many cases blood-letting should be avoided; and even although, during the inflammatory state of the disease, it may be proper, it will be necessary to take care that the evacuation be not so large as to increase the state of debility which is to follow.

142. From all this it must appear that the employing blood-letting, in certain fevers, requires much discernment and skill, and is to be governed by the consideration of the following circumstances,

1, The nature of the prevailing epidemic.

2, The nature of the remote cause.

3, The season and climate in which the disease occurs.

4, The degree of phlogistic diathesis present.

5, The period of the disease.

6, The age, vigour, and plethoric state of the patient.

7, The patient's former diseases and habits of blood-letting.

8, The appearance of the blood drawn out.

9. The effects of the blood-letting that may have been already practised.

143. When, after the consideration of these circumstances, blood-letting is determined to be necessary, it should be observed, that it is more effectual, according as the blood is more suddenly drawn off, and as the body is at the same time more free from all irritation, and consequently when in a posture in which the fewest muscles are in action.

144. Another evacuation whereby the quantity of fluids contained in the body can be considerably diminished, is that of purging.

145. If we consider the quantity of fluids constantly present in the cavity of the intestines, and the quantity which may be drawn from the in-

numerable excretories that open into this cavity, it will be obvious, that a very great evacuation can be made by purging; and, if this be done by a stimulus applied to the intestines, without being at the same time communicated to the rest of the body, it may, by emptying both the cavity of the intestines, and the arteries which furnish the excretions poured into it, induce a considerable relaxation in the whole system; and therefore purging seems to be a remedy suited to moderate the violence of reaction in fevers.

146. But it is to be observed, that, as the fluid drawn from the excretories opening into the intestines, is not all drawn immediately from the arteries, as a part of it is drawn from the mucous follicles only; and as what is even more immediately drawn from the arteries, is drawn off slowly; so the evacuation will not, in proportion to its quantity, occasion such a sudden depletion of the red vessels as blood-letting does; and therefore cannot operate so powerfully in taking off the phlogistic diathesis of the system.

147. At the same time, as this evacuation may induce a considerable degree of debility; so, in those cases in which a dangerous state of debility is likely to occur, purging is to be employed with a great deal of caution; and more especially as the

due measure of the evacuation is more difficult to be applied than in the case of blood-letting.

148. As we shall presently have occasion to observe, that it is of great importance, in the cure of fevers, to restore the determination of the blood to the vessels on the surface of the body; so purging, as in some measure taking off that determination, seems to be an evacuation not well adapted to the cure of fevers.

149. If, notwithstanding these doubts, (146, 147, and 148), it shall be asserted, that purging, even from the exhibition of purgatives, has often been useful in fevers; I would beg leave to maintain, that this has not happened from a large evacuation; and, therefore, not by moderating the violence of reaction, excepting in the case of a more purely inflammatory fever, or of exanthemata of an inflammatory nature. In other cases of fever, I have seen a large evacuation by purging, of mischievous consequence; and if, upon occasion, a more moderate evacuation has appeared to be useful, it is apprehended to have been only by taking off the irritation of retained feces, or by evacuating corrupted humours which happened to be present in the intestines; for both of which purposes, frequent laxatives may be properly employed.

150. Another set of means (127, 2) for moderating the violence of reaction in fevers, are those suited to take off the spasm of the extreme vessels, which we believe to be the irritation that chiefly supports the reaction.

Though I have put here this indication of taking off the spasm of the extreme vessels, as subordinate to the general indication of moderating the violence of reaction; it is however to be observed here, that as fever universally consists in an increased action of the heart, either in frequency or in force, which in either case is supported by a spasm of the extreme vessels, so the indication for removing this is a very general one, and applicable, in almost every circumstance of fever, or at least with a few exceptions, to be taken notice of hereafter.

151. For taking off the spasm of the extreme vessels, the means to be employed are either internal or external.

152. The internal means (151) are,

1, Those which determine the force of the circulation to the extreme vessels on the surface of the body, and, by restoring the tone and activity of these vessels, may overcome the spasm on their extremities.

2, Those medicines which have the power of taking off spasm in any part of the system, and which are known under the title of ANTISPASMODICS.

153. Those remedies which are fit to determine to the surface of the body, are,

1, DILUENTS;
2, NEUTRAL SALTS;
3, SUDORIFICS;
4, EMETICS.

154. Water enters, in a large proportion, into the composition of all the animal fluids, and a large quantity of it is always diffused through the whole of the common mass. Indeed, in a sound state, the fluidity of the whole mass depends upon the quantity of water present in it. Water, therefore, is the proper diluent of our mass of blood; and other fluids are diluent only in proportion to the quantity of water they contain.

155. Water may be said to be the vehicle of the several matters which ought to be excerned; and in a healthy state the fulness of the extreme vessels, and the quantity of excretions, are nearly in proportion to the quantity of water present in the body. In fever, however, although the excretions are in some measure interrupted, they continue in such quantity as to exhale the more fluid parts of the blood; and while a portion of them is at the same time necessarily retained in the larger vessels, the smaller and the extreme vessels, both from the deficiency of fluid, and their own contracted state, are less

filled, and therefore allowed to remain in that condition.

156. To remedy this contracted state, nothing is more necessary than a large supply of water or watery fluids, taken in by drinking or otherwise; for as any superfluous quantity of water is forced off by the several excretories, such a force applied may be a means of dilating the extreme vessels, and of overcoming the spasm affecting their extremities.

157. Accordingly, the throwing in of a large quantity of watery fluids has been, at all times, a remedy much employed in fevers; and in no instance more remarkably, than by the Spanish and Italian physicians, in the use of what they call the *Diæta aquea.*

158. This practice consists in taking away every other kind of aliment and drink, and in giving in divided portions every day, for several days together, six or eight pounds of plain water, generally cold, but sometimes warm. All this, however, is to be done only after the disease has continued for some time, and, at least, for a week.

159. A second means (153, 2) of determining to the surface of the body, is by the use of neutral salts. These, in a certain dose taken into the

stomach, produce soon after a sense of heat upon the surface of the body; and, if the body be covered close and kept warm, a sweat is readily brought out. The same medicines, taken during the cold stage of a fever, very often put an end to the cold stage, and bring on the hot; and they are also remarkable for stopping the vomiting which so frequently attends the cold stage of fevers. All this shews, that neutral salts have a power of determining the blood to the surface of the body, and may therefore be of use in taking off the spasm which in fever subsists there.

160. The neutral most commonly employed in fevers, is that formed of an alkali with the native acid of vegetables: but all the other neutrals have more or less of the same virtue; and perhaps some of them, particularly the ammoniacal salts, possess it in a stronger degree.

161. As cold water taken into the stomach often shews the same diaphoretic effects with the neutral salts, it is probable that the effect of the latter depends upon their refrigerant powers mentioned above (134). What is the effect of the neutral salts, given when they are forming and in a state of effervescence? It is probable that this circumstance may increase the refrigerant power of these salts, and may introduce into the body a quantity of fixed air; but for these purposes it

would seem proper to contrive that the whole of the effervescence should take place in the stomach.

162. A third means (153, 3) of determining to the surface of the body, and taking off the spasm subsisting there, is by the use of sudorific medicines, and of sweating.

163. The propriety of this remedy has been much disputed; and specious arguments may be adduced both for and against the practice.

In favour of the practice, it may be said,

1, That, in healthy persons, in every case of increased action of the heart and arteries, a sweating takes place, and is seemingly the means of preventing the bad effects of such increased action.

2, That, in fevers, their most usual solution and termination is by spontaneous sweating.

3, That, even when excited by art, it has been found manifestly useful, at certain periods, and in certain species of fever.

164. Upon the other hand, it may be urged against the practice of sweating,

1, That as in fevers a spontaneous sweating does not immediately come on, so there must be in these some circumstances different from those in the state of health, and which may therefore render it doubtful whether the sweating can be safely excited by art.

2, That, in many cases, the practice has been attended with bad consequences. The means commonly employed have a tendency to produce an inflammatory diathesis; which, if not taken off by the sweat following their use, must be increased with much danger. Thus, sweating employed to prevent the accessions of intermitting fevers, has often changed them into a continued form, which is always dangerous.

3, The utility of the practice is further doubtful, because sweating, when it happens, does not always give a final determination; as must be manifest in the case of intermittents, as well as in many continued fevers, which are sometimes in the beginning attended with sweatings that do not prove final; and, on the contrary, whether spontaneous, or excited by art, seem often to aggravate the disease.

165. From these considerations, it is extremely doubtful if the practice of sweating can be admitted very generally; but, at the same time, it is also doubtful, if the failure of the practice, or the mischiefs said to have arisen from it, have not been owing to the improper conduct of the practitioner.

With respect to this last, it is almost agreed among physicians,

1, That sweating has been generally hurtful, when excited by stimulant, heating, and inflammatory medicines.

2, That it has been hurtful when excited by much external heat, and continued with a great increase of the heat of the body.

3, That it is always hurtful when it does not soon relieve, but rather increases, the frequency and hardness of the pulse, the anxiety and difficulty of breathing, the headach, and delirium.

4, That it is always hurtful, if it be urged when the sweat is not fluid, and when it is partial, and on the superior parts of the body only.

166. In these cases, it is probable, that either an inflammatory diathesis is produced which increases the spasm on the extreme vessels: or that, from other causes, the spasm is too much fixed to yield easily to the increased action of the heart and arteries; and, upon either supposition, it must be obvious, that urging the sweat, as ready to produce a hurtful determination to some of the internal parts, may be attended with very great danger.

167. Though the doubts started (164) are to be attended to, and although the practices (165), having been found hurtful, are therefore to be rejected, it still remains true,

1, That sweating has certainly been often useful in preventing the accession of fevers, when the times of this have been certainly foreseen, and a proper conduct employed.

2, That, even after fevers have in some measure come on, sweating, when properly employed, either at the very beginning of the disease, or during its approach and gradual formation, has often prevented their further progress.

3, That, even after pyrexiæ have continued for some time, sweating has been sucessfully employed in curing them, as particularly in the case of rheumatism.

4, That certain fevers, produced by a very powerful sedative contagion, have been generally treated, so far as we yet know, most successfully by sweating.

168. These instances (167), are in favour of sweating, but give no general rule; and it must be left to further experience to determine how far any general rule can be established in this matter. In the meantime, if the practice of sweating is to be attempted, we can venture to lay down the following rules for the conduct of it:

1, That it should be excited without the use of stimulant inflammatory medicines.

2, That it should be excited with as little external heat, and with as little increase of the heat of the body, as possible.

3, That, when excited, it should be continued for a due length of time, not less than twelve hours, and sometimes for twenty-four or forty-eight hours; always, however, providing that it proceeds without the circumstances mentioned (165, 3, 4).

4, That for some part of the time, and as long as the person can easily bear, it should be carried on without admitting of sleep.

5, That it should be rendered universal over the whole body; and therefore, particularly, that care be taken to bring the sweating to the lower extremities.

6, That the practice should be rendered safer by moderate purging, excited at the same time.

7, That it should not be suddenly checked by cold any how applied to the body.

169. When attention is to be given to these rules, the sweating may be excited, 1, By warm bathing, or a fomentation of the lower extremities; 2, By frequent draughts of tepid liquors, chiefly water, rendered more grateful by the addition of a light aromatic, or more powerful by that of a small quantity of wine; 3, By giving some doses of neutral salts; 4, Most effectually, and perhaps most safely, by a large dose of an opiate, joined with a portion of neutral salts, and of an emetic.

In what cases may cold water, thrown into the stomach in large quantities, be employed to excite sweating? See CELSUS, lib. iii, chap. vii, —ix.

170. The fourth means (153, 1) of determining to the surface of the body, and thereby taking

off the spasm affecting the extreme vessels, is by the use of emetics.

171. Emetics, and particularly antimonial emetics, have been employed in the cure of fevers ever since the introduction of chemical medicines: but, for a long time, they were employed by chemists and chemical practitioners only; and although of late the use of them has become very general, their efficacy is still disputed, and their manner of operating is not commonly explained.

172. Vomiting is in many respects useful in fevers; as it evacuates the contents of the stomach; as it emulges the biliary and pancreatic ducts; as it evacuates the contents of the duodenum, and perhaps also of a larger portion of the intestines; as it agitates the whole of the abdominal viscera, expedes the circulation in them, and promotes their several secretions; and lastly, as agitating also the viscera of the thorax, it has like effects there. All these several effects are, in many cases and circumstances of fever, procured with advantage; but do not properly fall under our view here, where we are to consider only the effect of vomiting in determining to the surface of the body.

173. This effect we do not impute to the exercise of vomiting in agitating the whole frame; but to the particular operation of emetics upon the

muscular fibres of the stomach, whereby they excite the action of the extreme arteries on the surface of the body, so as thereby effectually to determine the blood into these vessels, remove the atony, and take off the spasm affecting them.

174. That such is the power of emetics, will appear from the several considerations mentioned above (44); and therefore, that they are remedies well suited to the cure of fevers.

175. Emetics, for that purpose, are administered in two different ways: that is, either in such doses as may excite full and repeated vomitings; or in such doses as may excite sickness and nausea only, with little or no vomiting at all.

176. Full vomiting is best suited to the several purposes mentioned (172); and is also well suited to determine to the surface of the body, so as thereby to obviate the atony and spasm which lay the foundation of fever. Thus vomiting, excited a little before the expected accession of the paroxysm of an intermittent, has been found to prevent the paroxysm altogether. And it has been observed also, that, when contagion has been applied to a person, and first discovers its operation, a vomit given will prevent the fever which was otherwise to have been expected. See LIND *on Fevers and Infection.*

177. These are advantages to be obtained by exciting vomiting at the first approach of fevers, or of the paroxysms of fevers; and after fevers are formed, vomiting may also be employed to take off, perhaps entirely, the atony and spasm, or at least to moderate these, so that the fever may proceed more gently and safely.

178. It is seldom, however, that vomiting is found to produce a final solution of fevers; and, after they are once formed, it is commonly necessary to repeat the vomiting several times; but this is attended with inconvenience, and sometimes with disadvantage. The operation of full vomiting commonly soon ceases, and the exercise of vomiting is often a debilitating power; and therefore when the vomiting does not remove the atony and spasm very entirely, it may give occasion to their recurring with greater force.

179. For these reasons, after fevers are fully formed, physicians have thought proper to employ emetics in nauseating doses only. These are capable of exciting the action of the extreme vessels, and their operation is more permanent. At the same time, they often shew their power by exciting some degree of sweat, and their operation is rendered more safe, by their commonly producing some evacuation by stool.

180. Such are the advantages to be procured

by nauseating doses of emetics; and it only remains to mention, what are the medicines most fit to be employed in that manner, what are the most proper times for exhibiting, and what is the best manner of administering them.

181. The emetics at present chiefly in use, are ipecacuanha and antimony.

The former may be employed for every purpose of emetics, particularly those mentioned (172). It may likewise be employed, either in larger or smaller doses, for determining to the surface of the body: but, even in very small doses, it so readily excites vomiting, as to be with difficulty employed for the purpose of nauseating only; and however employed, there is reason to believe that its effects are less permanent, and less powerfully communicated from the stomach to the rest of the system, than those of antimony.

182. This, therefore, is generally preferred; and its preparations, seemingly various, may all be referred to two heads: the *one* comprehending those in which the reguline part is in a condition to be acted upon by acids; and therefore, on meeting with acids in the stomach, becomes active: and the *other*, comprehending those preparations in which the reguline part is already joined with an acid, rendering it active.

183. Of each kind there are great numbers; but not differing essentially from one another. It will be enough for us to compare the calx antimonii nitrata of the Edinburgh Dispensatory, with the emetic tartar of the same. The former, as I judge, is nearly the same with what is called James's powder. Which of these is best suited to the cure of fevers, as above explained, seems doubtful; but it appears to me, that although the former may have some advantages from its slower operation, and may thereby seem to be more certainly sudorific and purgative, yet the uncertainty of its dose renders it inconvenient, has often given occasion to the timid to be disappointed, and to the bold to do mischief. On the other hand, the dose of the emetic tartar can be exactly ascertained; and I think it may be exhibited in such a manner as to produce all the advantages of the other.

184. Whichsoever of these preparations be employed, I judge the most proper time for exhibiting them, to be the time of accessions; or a little before, when that can be certainly known. In continued fevers, the exacerbations are not always very observable; but there is reason to think, that one commonly happens about noon, or soon after it, and another in the evening; and that these, therefore, are the most proper times for exhibiting emetics.

185. With respect to the manner of administration, that of the calx nitrata is simple, as the whole of what is judged a proper dose is given at once, and no more can properly be given till the time of the next accession.

The administration of the emetic tartar is different. It is to be given in small doses, not sufficient to excite vomiting; and these doses, after short intervals, are to be repeated for several times, till sickness, nausea, and some, but not much, vomiting, come on. The difference of this administration must depend upon the dose, and the length of the intervals at which it is given. If it be intended that the medicine should certainly operate by stool, the doses are made small, and the intervals long. On the contrary, when vomiting is proper, or when much purging ought to be avoided, and therefore some vomiting must be admitted, the doses are made larger, and the intervals shorter.

186. With respect to both kinds of preparations, the repetition is to be made at the times of accession, but not very often. For if the first exhibitions, duly managed, have little effect, it is seldom that the after exhibitions have much; and it sometimes happens that the repeated vomitings, and especially repeated purgings, do harm by weakening the patient.

187. The other set of internal medicines,

(152, 2), which I suppose may be useful in taking off the spasm of the extreme vessels, are those named antispasmodic. How many of these may be properly employed, I am uncertain; and their mode of operation is involved in great obscurity. It is certain, however, that opium, camphor, musk, and perhaps some others, have been employed in fevers with advantage; but the circumstances in which they are especially proper and safe, I find difficult to ascertain; and therefore cannot venture here to lay down any general doctrine concerning them.

188. The external means (151), suited to take off the spasm of the extreme vessels, are BLISTERING and WARM BATHING.

189. What are the effects of blistering, so frequently employed in fevers, is not yet agreed upon among physicians; and many different opinions have been maintained on this subject, drawn not only from reasoning, but also from presumed experience. I must not, however, enter into controversy; but shall deliver my own opinion in a few words.

190. I am persuaded, that the small quantity of cantharides absorbed from a blistering plaster, is not sufficient to change the consistence of the mass of blood: and therefore that such a quantity can

neither do good, by resolving phlogistic lentor, if it exists; nor do harm, by increasing the dissolution of the blood arising from a putrid tendency in it. I therefore neglect entirely the effects of cantharides upon the fluids.

191. The inflammation produced by the application of cantharides to the skin, affords a certain proof of their stimulant power: but, in many persons, the effect of that stimulus is not considerable; in many, it is not communicated to the whole system; and, even when the effect does take place in the whole system, it seems to be taken off, very entirely, by the effusion and evacuation of serum from the blistered part. I conclude, therefore, that neither much good is to be expected, nor much harm to be apprehended, from the stimulant power of blistering, and the certainty of this conclusion is established, by the great benefit arising from the proper practice of blistering in inflammatory diseases.

192. Much has been imputed to the evacuation occasioned by blistering; but it is never so considerable as to effect the whole system; and therefore can neither, by sudden depletion, relax the sanguiferous vessels, nor, by any revulsion, affect the general distribution of the fluids.

193. The evacuation, however, is so consider-

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193. The evacuation, however, is so consider-

200. The marks of the good effects of such a fomentation, are, the patient's bearing it easily, its relieving delirium, and inducing sleep.

201. Having now considered the several means of satisfying the first general indication in the cure of fevers, I proceed to the second, (126), which is, *to remove the cause, or obviate the effects, of debility.*

202. Most of the sedative powers inducing debility, cease to act soon after they have been first applied; and therefore, the removing them is not an object of our present indication. There is only one which may be supposed to continue to act for a long time; and that is, the contagion applied: but we know nothing of the nature of contagion that can lead us to any measures for removing or correcting it. We know only its effects as a sedative power inducing debility, or as a ferment inducing a tendency to putrefaction in the fluids. The obviating the latter will be considered under our third general indication, and the former alone is to be considered here.

203. The debility induced in fevers by contagion, or other causes, appears especially in the weaker energy of the brain; but in what this consists, or how it may be directly restored, we do not well know. As nature, however, does, seem-

ingly for this purpose, excite the action of the heart and arteries, we ascribe the continuance of debility to the weaker reaction of the sanguiferous system; so that the means to be employed for obviating debility, are immediately directed to support and increase the action of the heart and arteries; and the remedies used are TONICS OR STIMULANTS.

204. In contagious diseases, both from the effects which appear, and from dissections, it is known that the tone of the heart and arteries is considerably diminished; and that tonic remedies, therefore, are properly indicated.

These are to be considered as of two kinds; the first being the power of cold, the second that of tonic medicines.

205. The power of cold, as a tonic, I have mentioned above, (90); and it is employed in fevers, in two ways; either as the cold matter is thrown into the stomach, or as it is applied to the surface of the body.

206. As it has been shewn above, that the tonic power of cold can be communicated from any one part to every other part of the system; so it will readily be allowed, that the stomach is a part as fit for this communication as any other; and that

cold drink, taken into the stomach, may therefore prove an useful tonic in fevers.

207. This the experience of all ages has confirmed: but, at the same time, it has been frequently observed, that, in certain circumstances, cold drink, taken into the stomach, has proved very hurtful; and, therefore, that the use of cold drink in fevers requires some limitations. What these limitations should be, and what are all the circumstances which may forbid the use of cold drink, is difficult to determine; but it seems clearly forbidden, in all cases where a phlogistic diathesis prevails in the system, and more especially when there are topical affections of an inflammatory nature.

208. The other method of employing cold as a tonic, is, by applying it to the surface of the body. The application of cold air to the surface of the body, as a refrigerant power fit to moderate the violence of reaction, I have spoken of above (133); but probably it may also be considered here as a tonic, and useful in cases of debility.

209. Not only cool air, but cold water also, may be applied to the surface of the body, as a refrigerant, and perhaps as a tonic. The ancients frequently applied it with advantage, to particular

parts, as a tonic; but it is a discovery of modern times, that in the case of putrid fevers, attended with much debility, the body may be washed all over with cold water.

210. This was first practised at Breslaw in Silesia, as appears from a dissertation, under the title of *Epidemia verna quæ Wratislaviam, anno 1737, afflixit*, to be found in the appendix to the *Acta Nat. Curios.* vol. x. And from other writers we find, that the practice has passed into some of the neighbouring countries; although in this island, so far as I know, we have hitherto had no experience of it.

211. The medicines which have been employed in fevers, as tonics, are various. If the saccharum saturni has been found useful, it is, probably, as a tonic, rather than as a refrigerant; and the ens veneris, or other preparations of iron which have been employed, can act as tonics only. The preparations of copper, from their effects in epilepsy, are presumed to possess a tonic power; but, whether their use in fevers be founded upon their tonic or their emetic powers, may be uncertain. The use of arsenic and of alum, in intermittent fevers, seems manifestly to depend upon their tonic power. And, upon the whole, there may occur cases of continued fevers, which may be cured by tonics taken from the fossil kingdom; but the use

of these has been rare, as well as the effects uncertain; and physicians have employed, more commonly, the vegetable tonics.

212. A great variety of these has been employed in the cure of intermittent fevers; but how many of them may be employed in continued fevers, or in what circumstances of these fevers, is not well ascertained; and I shall now only consider the question with respect to the most celebrated of these tonics, the Peruvian bark.

213. This bark has been commonly considered as a specific, or as a remedy of which the operation was not understood. But it is certainly allowable to inquire into this matter; and I apprehend it may be explained.

214. To this purpose it is to be remarked, that as, in many cases, the effects of the bark are perceived soon after its being taken into the stomach, and before it can possibly be conveyed to the mass of blood, we may conclude, that its effects do not arise from its operating on the fluids; and must, therefore, depend upon its operating on the nerves of the stomach, and being thereby communicated to the rest of the nervous system. This operation seems to be a tonic power, the bark being a remedy in many cases of debility, particularly in gangrene: and, as the recurrence of the parox-

ysms of intermittent fevers depends upon a recurrence of atony (35 and 36), so probably the bark, by its tonic power, prevents the recurrence of these paroxysms; and this is greatly confirmed by observing, that many other tonic medicines answer the same purpose.

215. If the operation of the bark may be thus explained, from its possessing a tonic power it is easy to perceive why it is improper when a phlogistic diathesis prevails; and, from the same view, we can ascertain in what cases of continued fever it may be admitted. These are either after considerable remissions have appeared, when it may be employed to prevent the return of exacerbations, on the same footing that it is used in intermittent fevers; or in the advanced state of fevers, when all suspicion of an inflammatory state is removed, and a general debility prevails in the system; and its being then employed is sufficiently agreeable to the present practice.

216. With respect to the use of the bark, it is proper to add, that good effects are to be expected from it, almost only when given in substance and in large quantity.

217. Another set of medicines to be employed for obviating debility and its effects, are the direct stimulants (203). These, in some measure, in-

crease the tone of the moving fibres; but they are different from the tonics, as more directly exciting and increasing the action of the heart and arteries. This mode of their operation renders the use of them ambiguous; and when an inflammatory diathesis is present, as so often happens in the beginning of fevers, the effects of these stimulants may be very hurtful; but it still remains probable, that, in the advanced state of fevers, when debility prevails, they may be useful.

218. What are the stimulants that may be most properly employed, I am uncertain, as the use of them in this age has been rare; but I am disposed to believe, that, of all kinds, wine is the best.

219. Wine has the advantage of being grateful to the palate and stomach, and of having its stimulant parts so much diluted, that it can be conveniently given in small doses; so that it may be employed with sufficient caution: but it is of little service unless taken pretty largely.

220. It may be supposed, and on good grounds, that wine has an operation analogous to that of opium and some other narcotic medicines It may indeed be said, that we can distinctly mark its stimulant power only, which renders its effects in the phrenetic delirium manifestly hurtful, and, in the mild delirium, depending on debility, as re-

markably useful. But in all this, the analogy with opium is still obvious; and it is probable, that both wine and opium are more useful by their sedative and antispasmodic, than by their stimulant, powers.

221. These are the means of answering our second general indication (126, 2); and I now proceed to the third, which is, *to obviate or to correct the tendency of the fluids to putrefaction.*

222. This may be done,

1, By avoiding any new application of putrid or putrescent matter;

2, By evacuating the putrid or putrescent matter already present in the body;

3, By correcting the putrid or putrescent matter remaining in the body;

4, By supporting the tone of the vessels, and thereby resisting further putrefaction, or obviating its effects.

223. The further application of putrid or putrescent matter may be avoided,

1, By removing the patient from places filled with corrupted air;

2, By correcting the air from which he cannot be removed;

3, By preventing the accumulation of the patient's own effluvia, by a constant ventilation, and by a frequent change of bed-clothes and body-linen;

4, By the careful and speedy removal of all excremental matters from the patient's chamber.

5, By avoiding animal food, or correcting it.

224. The putrid or putrescent matter, already present in the body, may be evacuated partly by evacuating frequently the contents of the intestines; and more effectually still, by supporting the excretions of perspiration and urine, by the plentiful use of diluents.

225. The putrid or putrescent matter, remaining in the body, may be rendered more mild and innocent by the use of diluents; or may be corrected by the use of antiseptics. These last are of many and various kinds; but which of them are conveniently applicable, or more particularly suited to the case of fevers, is not well ascertained. Those most certainly applicable and useful, are acescent aliments, acids of all kinds, neutral salts, and fixed air.

226. The progress of putrefaction may be considerably retarded, and its effects obviated, by supporting the tone of the vessels: and this may be done by tonic remedies; the chief of which are, cold and Peruvian bark, both sufficiently treated of above, (205 *et seq.*)

227. I have now finished the consideration of the three general indications to be formed in the cure of continued fevers; and have mentioned most of the remedies which have been, upon any occasion, employed in this business. It was necessary, in the first place, to consider these indications and remedies separately, and to explain the operation of the latter more generally: but, from what has been now delivered, compared with what was said above, concerning the difference of fevers, and the signification of their several symptoms in forming the prognostic, I expect it will not be difficult to assign the indication, and to select and combine the several remedies mentioned, so as to adapt them to the several species and circumstances of continued fevers.

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I think it may be useful for my readers to have the whole of the cure of CONTINUED FEVERS brought under one view, as in the following table.—

In the cure of CONTINUED FEVERS, the indications are,

I. *To moderate the violence of reaction.*

Which may be done, by

1, Diminishing the action of the heart and arteries, by

A, Avoiding or moderating those irritations which are almost constantly applied to the body; as,

- a, The impressions made upon our senses, particularly,
  - α, Increased heat, whether arising from
    - αα, External heat, or
    - ββ, The accumulation of the heat of the body.
- b, The exercise of the body,
- c, The exercise of the mind,
- d, The taking in of aliment.
- e, Particular irritations arising from
  - α, The sense of thirst,
  - β, Crudities, or corrupted humours, in the stomach,
  - γ, The preternatural retention of fæces,
  - δ, A general acrimony of the fluids.

- B, Employing certain sedative powers; as,
  - a, Cold,
  - b, Refrigerants; the chief of which are,
    - α, Acids of all kinds,
    - β, Neutral salts,
    - γ, Metallic salts.
- C, Diminishing the tension and tone of the arterial system, by
  - a, Bloodletting,
  - b, Purging.

2, Taking off the spasm of the extreme vessels, by

- A Internal means; which are,
  - a, Those remedies which determine to the surface, as,
    - α, Diluents,
    - β, Neutral salts,
    - γ, Sudorifics,
    - δ, Emetics,
  - b, Those remedies, named antispasmodics.
- B, External means; as,
  - a, Blistering,
  - b, Warm bathing.

### II. *To remove the causes, or obviate the effects, of debility,* by

1, Supporting and increasing the action of the heart and arteries, by
  A, Tonics, as,
    a, Cold
    b, Tonic medicines, which are either,
      α, Fossil, as
        αα, Saccharum saturni, &c. or
      β, Vegetable, as,
        αα, Peruvian bark.
  B, Stimulants, as,
    a, Aromatics, &c.
    b, Wine.

### III. *To obviate or correct the tendency of the fluids to putrefaction,* by

1, Avoiding the application of putrid or putrescent matter, by
  A, Removing the patient from places filled with corrupted air.
  B, Correcting the air from which he cannot be removed.
  C, Avoiding the accumulation of the patient's own effluvia, by
    a, A constant ventilation,
    b, Frequently changing the bed-clothes and body-linen.
  D, Removing carefully and speedily all excremental matters.
  E, Avoiding animal food, or correcting it.
2, Evacuating the putrid or putrescent matter already present in the body, by

- A, Evacuating frequently the intestines.
- B, Supporting the excretions of perspiration and urine, by
  - a, Diluents,
  - b, Neutral salts.

3, Correcting the putrid or putrescent matter remaining in the body, by
- A, Diluents,
- B, Antiseptics,
- C, Fixed air.

4, Resisting farther putrefaction, or obviating its effects, by
- Supporting the tone of the vessels, by
  - Tonic remedies.

## SECT. II.

### *Of the Cure of Intermittent Fevers.*

228. It still remains to consider the cure of intermittent fevers; and with respect to these, we form also three general indications.

1. *In the time of intermission, to prevent the recurrence of paroxysms.*

2, *In the time of paroxysms, to conduct these so as to obtain a final solution of the disease.*

3, *To take off certain circumstances which might prevent the fulfilling of the two first indications.*

229. The first indication may be answered in two ways.

1, By increasing the action of the heart and arteries sometime before the period of accession, and supporting that increased action till the period of the accession be over, so as thereby to prevent the recurrence of the atony and spasm of the extreme vessels which give occasion to the recurrence of paroxysms.

2, Without increasing the action of the heart and arteries, the recurrence of paroxysms may be prevented, by supporting the tone of the vessels, and thereby preventing atony, and the consequent spasm.

230. For the purpose mentioned in 229, 1, the action of the heart and arteries may be increased.

1, By various stimulant remedies, internally given, or externally applied, and that without exciting sweat.

2, By the same remedies, or others so managed as to excite sweating, and to support that sweating till the period of accession be for sometime past.

3, By nauseating doses of emetics, given about an hour before the time of accession, thereby supporting and increasing the tone and action of the extreme vessels.

231. The tone of the extreme vessels may be supported without increasing the action of the

heart and arteries (229, 2), by various tonic medicines; as,

1, Astringents alone;
2, Bitters alone;
3, Astringents and bitters conjoined;
4, Astringents and aromatics conjoined;
5, Certain metallic tonics;
6, Opiates;
Lastly, an impression of horror.

A good deal of exercise, and as full a diet as the condition of the patient's appetite and digestion may allow of, will be proper during the time of intermission, and may be considered as belonging to this head.

232. Of all the tonic remedies mentioned (231), the most celebrated, and perhaps the most certainly effectual, is the Peruvian bark, the tonic power of which we have endeavoured to demonstrate above (214), and have, at the same time, explained its use in continued fevers.

The same observation as made in 216, is especially proper in the case of intermittents: and further, with respect to these, the following observations or rules are offered here.

1, That the bark may be employed with safety at any period of intermittent fevers, providing that, at the same time, there be neither a phlogistic diathesis prevailing in the system, nor any considerable or fixed congestion present in the abdominal viscera.

2, The proper time for exhibiting the bark in intermittent fevers, is during the time of intermission; and where intermissions are to be expected, it is to be abstained from in the time of paroxysms.

3, In remittents, though no entire apyrexia occurs, the bark may be given during the remissions; and it should be given, even though the remissions be inconsiderable, if, from the known nature of the epidemic, intermissions or considerable remissions are not to be soon expected, and that great danger is apprehended from repeated exacerbations.

4, In the case of genuine intermittents, while a due quantity of bark is to be employed, the exhibition of it ought to be brought as near to the time of accession as the condition of the patient's stomach will allow.

5, In general, in all cases of intermittents, it is not sufficient that the recurrence of paroxysms be stopped for once by the use of the bark; a relapse is commonly to be expected, and should be prevented by the exhibition of the bark, repeated at proper intervals.

233. Our second general indication for conducting the paroxysms of intermittent fevers, so as to obtain a final solution of the disease, may be answered,

1, By exhibiting emetics during the time of the cold stage, or at the beginning of the hot;

2, By opiates given during the time of the hot stage,

234. The circumstances which may especially prevent the fulfilling of those two indications, and therefore give occasion to our third, are, a phlogistic diathesis prevailing in the system, and congestions fixed in the abdominal viscera. The first must be removed by blood-letting and the antiphlogistic regimen; the second, by vomiting and purging.

Where these measures are not immediately effectual, I hold it safer to attempt the cure of the disease by the means pointed out in general in 229, rather than by those in article second of the same paragraph.

# BOOK II.

## OF INFLAMMATIONS, OR PHLEGMASIÆ.

## CHAP. I.

### OF INFLAMMATION IN GENERAL.

### SECT. I.

### *Of the phenomena of inflammation.*

235. WHEN any part upon the surface of the body is affected with unusual redness, heat, pain, and tumour, we name the disease an inflammation or phlegmasia. These symptoms of inflammation are never considerable, without the whole system being, at the same time, affected with pyrexia.

236. As the external, so likewise the internal, parts may be affected with inflammation; and we judge them to be so, when, together with pyrexia,

there is a fixed pain in any internal part, attended with some interruption in the exercise of its functions.

237. We judge of the presence of inflammation also from the state of the blood drawn out of the veins. When the blood, after cooling and concreting, shews a portion of the gluten separated from the rest of the mass, and lying on the surface of the crassamentum; as such separation happens in all cases of more evident phlegmasia; so in ambiguous cases, we, from this appearance, joined with other symptoms, infer the presence of inflammation. At the same time, it must be observed, that as several circumstances in blood-letting may prevent this separation of gluten from taking place in blood otherwise disposed to it; so, from the absence of such appearance, we cannot always conclude against the presence of inflammation.

238. I cannot easily give any other general history of the phenomena of inflammation than what is contained in the three preceding paragraphs; and the variations which may take place in its circumstances, will occur to be more properly taken notice of under the several heads of the particular genera and species to be hereafter mentioned. I proceed, therefore, to inquire into the proximate cause of inflammation in general.

## SECT. II.

### *Of the proximate cause of inflammation.*

239. The phenomena of inflammation (235), all concur in shewing, that there is an increased impetus of the blood in the vessels of the part affected; and as, at the same time, the action of the heart is not always evidently increased, there is reason to presume, that the increased impetus of the blood in the particular part is owing especially to the increased action of the vessels of that part itself.

240. The cause of this increased action in the vessels of a particular part is, therefore, what we are to inquire after, and to consider as the proximate cause of inflammation.

In many cases, we can manifestly perceive, that inflammation arises from the application of stimulant substances to the part. When the application of such stimulants, therefore, is evident, we seek for no other cause of inflammation; but as, in many cases, such application is neither evident, nor, with any probability, to be supposed, we must, in such cases, seek for some other cause of the increased impetus of the blood in the vessels of the part.

241. Many physicians have supposed, that an obstruction of the extreme vessels, any how pro-

duced, may prove a cause of inflammation; and particularly, that this may arise from an obstruction formed by a matter stopping up these vessels. But many difficulties attend this doctrine.

1, The opinion seems chiefly to have arisen from the appearance of the blood described in 237, when the separated gluten was considered as a preternatural and morbid matter: but we know now very certainly, that this gluten is constantly a constituent part of the human blood; and that it is only a peculiar separation of the parts of the blood, that happens in consequence of inflammation and some other circumstances, which gives occasion to the appearance that was falsely considered as a mark of the morbid lentor in the blood.

2, There are no experiments directly in proof of a preternatural lentor prevailing in the mass of blood; nor is there any evidence of certain parts of the blood occasionally acquiring a greater density and force of cohesion than ordinary; neither is there any proof of the denser, or more coherent parts, being present in the mass of blood in such greater proportion than usual, as to occasion a dangerous spissitude. The experiments of Dr. Browne Langrish on this subject afford no conclusion, having been made on certain parts of the blood, separated from the rest, without attending to the circumstances of blood-letting, which very much alter the state of separation and concretion of the blood drawn out of the veins.

3, The supposition of a preternatural lentor or viscidity of the blood, is not well founded; for it is probable, that nature has specially provided against a state of the fluids, so incompatible with the exercise of the most important functions of the animal economy. While motion continues to prevent any separation of parts, and heat continues to preserve the fluidity of the more viscid, there seems to be always so large a proportion of water present, as to give a sufficient fluidity to the whole. I must own, that this is not absolutely conclusive; but I still repeat it, as giving a probability to the general argument.

4, In the particular case of inflammation, there are several circumstances which render it probable, that the blood is then more fluid than usual.

5, I presume that no such general lentor, as Boerhaave and his disciples have supposed, does ever take place; because, if it did, it must shew more considerable effects than commonly appear.

6, Besides the supposition of an obstructing lentor, physicians have supposed, that an obstruction may be formed by an impermeable matter of another kind, and that such an obstruction may also be the cause of inflammation. This supposition is what is well known in the schools under the title of an *error loci*; but it is an opinion that I cannot find to be at all probable: for the motion of the blood in the extreme vessels is so weak and slow, as readily to admit a retrograde course of it; and therefore, if a particle of blood should happen to enter a vessel whose branches will not allow of its passage, it will be moved backwards, till it meet with a vessel fit for transmitting it; and the frequent ramifications and anastomoses of the extreme arteries are very favourable to this. I must own, indeed, that this argument is not absolutely conclusive; because I allow it to be pretty certain, that an *error loci* does actually upon occasion happen: but, for the reasons I have given, it is probable that it seldom happens, and is therefore rarely the cause of inflammation; or, if it be, that it is not merely by the obstruction that it produces; as, among other reasons, I conclude particularly from the following argument.

7, Though an obstruction should be supposed to take place, it will not be sufficient for producing the effects, and exhibiting the phenomena, that appear in inflammation. The theory that has been commonly employed on this occasion is by no means satisfying; and in fact, it appears from many observations and experiments, that considerable obstructions may be formed and may subsist, without producing the symptoms of inflammation.

242. Obstruction, therefore, from a matter stopping up the vessels, *Gaub. Pathol.* 249, i, is not to be considered as the primary cause of inflammation; but, at the same time, it is sufficiently probable, that some degree of obstruction does take

place in every case of inflammation. The distension, pain, redness, and tumor, attending inflammation, are to be explained only by supposing, that the extremities of the arteries do not readily transmit the unusual quantity of blood impelled into them by the increased action in the course of these vessels. Such an obstruction may be supposed to happen in every case of an increased impetus of the blood; but it is probable, that in the case of inflammation, there is also a preternatural resistance to the free passage of the fluids.

243. From the doctrine of fever, we are led to believe, that an increased action of the heart and arteries is not supported for any length of time by any other means than a spasm affecting the extreme vessels; and that the same spasm takes place in inflammation seems likely, because that every considerable inflammation is introduced by a cold stage, and is accompanied with that and other circumstances of pyrexia. It seems also probable, that something analogous to this occurs even in the case of those inflammations which appear less considerable, and to be purely topical.

244. From all this, the nature of inflammation may in many cases be explained in the following manner. Some causes of inequality in the distribution of the blood, may throw an unusual quantity of it upon particular vessels, to which it must

necessarily prove a stimulus. But, further, it is probable, that to relieve the congestion, the *vis medicatrix naturæ* increases still more the action of these vessels; and which, as in all other febrile diseases, it effects by the formation of a spasm on their extremities.

245. A spasm of the extreme arteries, supporting an increased action in the course of them, may therefore be considered as the proximate cause of inflammation; at least, in all cases not arising from direct stimuli applied; and even in this case the stimuli may be supposed to produce a spasm of the extreme vessels.

246. That, in inflammation, there is the concurrence of a constriction of the extreme vessels, with an increased action in the other parts of them, seems probable, from the consideration of rheumatism. This is a species of inflammation, which is often manifestly produced, either by cold applied to over-distended vessels, or by causes of an increased impetus, and over-distension in vessels previously constricted. Hence the disease especially appears at seasons liable to frequent and considerable vicissitudes of heat and cold.

To this we may add, that the parts of the body most frequently affected with inflammation, are those exposed, both to over-distension, from a change in the distribution of the fluids, and, at the same time, to the immediate action of cold. Hence, quinsies, and pneumonic inflammations, are more frequent than any others.

247. That the spasm of the extreme vessels takes place in inflammation, is to be further presumed from what is at the same time the state of the whole arterial system. In every considerable inflammation, though arising in one part only, an affection is communicated to the whole system, in consequence of which an inflammation is readily produced in other parts besides that first affected. This general affection is well known among physicians, under the name of the DIATHESIS PHLOGISTICA. It appears most commonly in persons of the most rigid fibres; is often manifestly induced by the tonic or astringent powers of cold; is increased by all tonic and stimulant powers applied to the body; is always attended with a hardness of the pulse; and is most effectually taken off by the relaxing power of blood-letting. From these circumstances, it seems probable, that the diathesis phlogistica consists in an increased tone, or contractility, and perhaps in an increased contraction of the muscular fibres of the whole arterial system. Such a state of the system seems often to arise, and subsist for some time, without the apparent inflammation of any particular part; but such a state of the system renders it likely, that a spasm may, at the same time, readily arise in any of the extreme vessels,

and a particular inflammation be there produced. It does, however, appear also, that the general diathesis frequently arises from inflammation begun in a particular part.

248. I have thus endeavoured, in the case of inflammation, to explain the state of the whole system, as well as that of the part more particularly affected. The latter I have considered as when in its first formation; but after it has subsisted for some time, various changes take place in the part affected; and of these I must now take notice.

## SECT. III.

### *Of the terminations of inflammation.*

249. If an inflammation be cured while the state and texture of the part remain entire, the disease is said to be terminated by RESOLUTION.

This happens when the previous congestion and spasm have been in a moderate degree, and the increased impetus of the blood has been sufficient to overcome the spasm, to dilate the vessels, and to remove the congestion, so that the part is restored to its ordinary and healthy state.

A resolution takes place, also, when the increased impetus of the fluids has produced an increased exhalation into the adjoining cellular texture, or an increased excretion in some neighbouring part, and has thereby relaxed the spasm, and relieved the congestion, in the vessels of the part more particularly affected.

Lastly, A resolution may take place, when the increased impetus of the blood in the whole system occasions an evacuation, which, though in a distant part, may prove sufficient to take off the phlogistic diathesis of the whole system, and thereby relieve the congestion and spasm of the particular part affected by inflammation.

250. The tumor which appears in inflammation may be imputed in part to the congestion of fluids in their proper vessels; but is owing chiefly to an effusion of matter into the adjoining cellular texture; and, accordingly, tumours seldom appear but in parts adjoining to a lax cellular texture. If, in this case, the matter effused be only a larger quantity of the ordinary exhaling fluid, this, when the free circulation in the vessels is restored, will be readily absorbed, and the state of the part will become the same as before. But, if the increased impetus of the blood in an inflamed part, dilate the exhalent vessels to such a degree, that they pour out an entire serum, this will not be so readily re-absorbed: and, from the experiments of Sir John Pringle, and especially from those of Mr. Gaber, *Miscell. Taurin.* vol. ii, we learn, that the serum, under stagnation, may suffer a particular change, by having the gluten present in it changed

into a white, opaque, moderately viscid, mild liquor, which we name PUS. When this change takes place in the inflamed part, as it is at the same time attended with an abatement of the redness, heat, and pain, which before distinguished the inflammation, so the disease is said to be terminated by SUPPURATION; and an inflamed part, containing a collection of pus, is called an ABSCESS.

251. In inflammation, the tendency of it to suppuration may be discovered, by the long continuance of the inflammation, without the symptoms of resolution; by some remission of the pain of distension; by the pain becoming of a throbbing kind, more distinctly connected with the pulsation of the arteries; by the pulse of the arteries being fuller and softer; and often by the patient's being frequently affected with cold shiverings. The period at which this takes place is not determined, but may be sometimes sooner, sometimes later. When the tendency is determined, the time necessary to a complete suppuration is different in different cases.

When pus is completely formed, the pain in the part entirely ceases, and a weight is felt in it. If the collection be formed immediately under the skin, the tumour becomes pointed, the part becomes soft, and the fluctuation of the fluid within can commonly be perceived; while, at the same time, for the most part, the redness of the skin formerly prevailing is very much gone.

252. In abscesses, while the pus is formed of one part of the matter which had been effused, the other and thinner parts are re-absorbed, so that, in the abscess, when opened, a pus alone appears. This pus, however, is not the converted gluten alone: for the conversion of this being the effect of a particular fermentation, which may affect the solid substance of the part, and perhaps every solid of animal bodies; so it most readily, and particularly, affects the cellular texture, eroding much of it, which thereby becomes a part of the pus. It generally happens also, that some of the smaller red vessels are eroded, and thereby some red blood often appears mixed with the pus in abscesses. Upon the whole, the internal surface of an abscess is to be considered as an ulcerated part.

253. This account of suppuration explains, why an abscess, when formed, may either spread into the cellular texture of the neighbouring parts; or, by eroding the incumbent teguments, be poured out upon the surface of the body, and produce an open ulcer.

254. We have here given the idea of an abscess as a collection of matter following inflammation;

but the term has been applied to every collection of matter effused, and changed by stagnation in an inclosed cavity.

The matter of abscesses, and of the ulcers following them, is various, according to the nature of what is effused, and which may be,

1, A matter thinner than serum;

2, An entire and pure serum;

3, A quantity of red globules;

4, A matter furnished by particular glands seated in the part;

5, A mixture of matters from different sources, changed by peculiar fermentation.

It is the second only which affords a proper pus; the effusion whereof, whether in suppurating parts or ulcers, seems to be the peculiar effect of an inflammatory state of the vessels; and for this reason it is, that, when ulcers do not produce a proper pus, a circumstance always absolutely necessary to their healing, we, in many cases, bring the ulcers to a state of proper suppuration, by the application of stimulants exciting inflammation, such as balsams, mercury, copper, &c.

255. When the matter effused into the cellular texture of an inflamed part, is tainted with a putrid ferment, this produces, in the effused matter, a state approaching more or less to that of putrefaction. When this is in a moderate degree, and affects only the fluids effused, with the substance

of the cellular texture, the part is said to be affected with GANGRENE; but if the putrefaction affect also the vessels and muscles of the part, the disease is said to be a SPHACELUS.

256. A gangrene, and its consequences, may arise from a putrid ferment diffused in the mass of blood, and poured out with the serum effused, which it operates upon more powerfully while the serum is stagnant, and retained in the heat of the body: but it may also arise from the peculiar nature of the matter effused being disposed to putrefaction; as particularly seems to be the case of the red globules of the blood effused in a large quantity. In a third manner also, a gangrene seems frequently to arise from the violent excitement of the inflammation destroying the tone of the vessels, whereby the whole fluids stagnate, and run into putrefaction, which taking place in any degree, destroys still further the tone of the vessels, and spreads the gangrene.

257. In inflammation, the tendency to gangrene may be apprehended from an extreme violence of pain and heat in the inflamed part, and from a great degree of pyrexia attending the inflammation.

The actual coming on of gangrene may be perceived, by the colour of the inflamed part changing from a clear to a dark red; by blisters arising upon the part; by the part becoming soft, flaccid, and insensible; and by the ceasing of all pain while these appearances take place.

As the gangrene proceeds, the colour of the part becomes livid, and, by degrees, quite black; the heat of the part entirely ceases; the softness and flaccidity of the part increase; it loses its consistence, exhales a cadaverous smell, and may then be considered as affected with sphacelus.

258. Gangrene is thus a *third* manner in which inflammation terminates: and the schools have commonly marked a *fourth* termination of inflammation; which is, by a scirrhus, or an indolent hardness of the part formerly affected with inflammation. This, however, is a rare occurrence, and does not seem to depend so much upon the nature of inflammation, as upon the circumstances of the part affected. It is in glandular parts chiefly that scirrhosity is observed; and it is probably owing to the parts readily admitting a stagnation of the fluids. I have observed, that inflammation seldom induces scirrhus; but that this more commonly arises from other causes; and when inflammation supervenes, which it is sooner or later apt to do, it does not so commonly increase as change the scirrhosity into some kind of abscess. From these considerations, it does not seem necessary to take any further notice of scirrhus as a termination of inflammation.

259. There are, however, some other terminations of inflammations not commonly taken notice of, but now to be mentioned.

One is, by the effusion of a portion of the entire mass of blood, either by means of rupture or of anastomosis, into the adjoining cellular texture. This happens especially in inflammations of the lungs, where the effused matter, by compressing the vessels, and stopping the circulation, occasions a fatal suffocation ; and this is perhaps the manner in which pneumonic inflammation most commonly proves fatal.

260. Another kind of termination, is that of certain inflammations on the surface of the body, when there is poured out under the cuticle a fluid, which being too gross to pass through its pores, therefore separates it from the skin, and raises it up into the form of a vesicle containing the effused fluid ; and by which effusion the previous inflammation is taken off.

261. Besides these already mentioned, I believe there is still another manner in which inflammation terminates. When the internal parts are affected with inflammation, there seems to have been almost always upon their surface an exudation, which appears partly as a viscid concretion upon their surface, and partly as a thin serous fluid effused into the cavities in which the inflamed

viscera are placed. Though we have become acquainted with these appearances only, as very constantly accompanying those inflammations which have proved fatal; it is however probable, that like circumstances may have attended those which were terminated by resolution, and may have contributed to that event. It is in favour of this supposition that there are instances of pneumonic inflammation terminating in a hydrothorax.

## SECT. IV.

### *Of the remote causes of inflammation.*

262. The remote causes of inflammation may be reduced to five heads.

1, The application of stimulant substances; among which are to be reckoned the action of fire, or burning.

2, External violence operating mechanically in wounding, bruising, compressing, or over-stretching the parts.

3, Extraneous substances lodged in any part of the body, irritating by their chemical acrimony or mechanical form, or compressing by their bulk or gravity.

4, Cold, in a certain degree, not sufficient immediately to produce gangrene.

5, An increased impetus of the blood determined to a particular part.

It will not be difficult to understand how these remote causes, singly, or in concurrence, produce the proximate cause of inflammation.

263. It does not appear that, in different cases of inflammation, there is any difference in the state of the proximate cause, except in the degree of it; and, though some difference of inflammation may arise from the difference of the remote causes, yet this is not necessary to be taken notice of here; because the different appearances which attend different inflammations may be referred, for the most part, to the difference of the part affected, as will appear when we shall consider the several genera and species marked in the nosology. When I come to treat of these, I shall find a more proper occasion for taking notice of the different states of the proximate, or of the differences of the remote cause, than by treating of them in general here.

## SECT. V.

### *Of the cure of inflammation.*

264. The indications of cure in inflammation are different, according as it may still be capable of resolution, or may have taken a tendency to the several other terminations above mentioned. As the tendency to these terminations is not always

immediately evident, it is always proper, upon the first appearance of inflammation, to attempt the cure of it by resolution. For this purpose, the indications of cure are;

1, To remove the remote causes, when they are evident, and continue to operate;

2, To take off the phlogistic diathesis affecting either the whole system, or the particular part;

3, To take off the spasm of the particular part, by remedies applied either to the whole system, or to the part itself.

265. The means of removing the remote causes will readily occur, from considering the particular nature and circumstances of the different kinds. Acrid matters must be removed, or their action must be prevented, by the application of correctors or demulcents. Compressing and overstretching powers must be taken away; and, from their several circumstances, the means of doing so will be obvious.

266. The means of taking off the phlogistic diathesis of the system, are the same with those for moderating the violence of reaction in fever, which are mentioned and treated of from 127 to 149, and therefore need not be repeated here. I only observe, that, in the use of those remedies, there is less occasion for any reserve than in many cases of fever; and, more particularly, that topi-

cal bleedings are here particularly indicated and proper.

267. The means of taking off the spasm of the particular part are nearly the same as those mentioned above, for taking off the spasm of the extreme vessels in the case of fever, and which are treated of from 150 to 200. Only it is observed here, that some of these are here especially indicated, and that some of them are to be directed more particularly to the part especially affected: the management of which will be more properly considered when we shall treat of particular inflammations.

268. When a tendency to suppuration (251) is distinctly perceived, as we suppose it to depend upon the effusion of a fluid which cannot be easily reabsorbed, so it becomes necessary that this fluid be converted into pus, as the only natural means of obtaining its evacuation: and, as the effusion is, perhaps, seldom made without some rupture of the vessels, to the healing of which a pus is absolutely necessary; so, in the case of a tendency to suppuration, the indication of cure always is, to promote the production of a perfect pus as quickly as possible.

269. For this purpose, various remedies, supposed to posses a specific power, have been pro-

posed; but I can perceive no such power in any of them; and, in my opinion, all that can be done is, to favour the suppuration by such applications as may support a proper heat in the part, as, by some tenacity, may confine the perspiration of the part, and as, by an emollient quality, may weaken the cohesion of the teguments, and favour their erosion.

270. As, in the case of certain effusions, a suppuration is not only unavoidable, but desirable, it may be supposed, that most of the means of resolution formerly mentioned should be avoided; and accordingly our practice is commonly so directed. But, as we observe, on the one hand, that a certain degree of increased impetus, or of the original circumstances of inflammation, is requisite to produce a proper suppuration; so it is then especially necessary to avoid those means of resolution that may diminish too much the force of the circulation. And as, on the other hand, the impetus of the blood, when violent, is found to prevent the proper suppuration; so, in such cases, although a tendency to suppuration may have begun, it may be proper to continue those means of resolution which moderate the force of the circulation.

With respect to the opening of abscesses, when completely formed, I refer to the writings on surgery.

271. When an inflammation has taken a tendency to gangrene, that event is to be prevented by every possible means; and these must be different, according to the nature of the several causes occasioning that tendency, as may be understood from what has been already said of them. After a gangrene has, in some degree, taken place, it can be cured only by the separation of the dead from the living parts. This, in certain circumstances, can be performed by the knife, and always most properly, when it can be so done.

In other cases, it can be done by exciting a suppuratory inflammation on the verge of the living part, whereby its cohesion with the dead may be everywhere broken off, so that the latter may fall off by itself. While this is doing, it is proper to prevent the further putrefaction of the part, and its spreading wider. For this purpose, various antiseptic applications have been proposed: but it appears to me, that while the teguments are entire, these applications can hardly have any effect; and therefore, that the fundamental procedure must be to scarify the part, so as to reach the living substance, and, by the wounds made there, to excite the suppuration required. By the same incisions also, we give access to antiseptics, which may both prevent the progress of the putrefaction in the dead, and excite the inflammation necessary on the verge of the living part.

272. When the gangrene proceeds from a loss of tone; and when this, communicated to the neighbouring parts, prevents that inflammation which, as I have said, is necessary to the separation of the dead part from the living; it will be proper to obviate this loss of tone by tonic medicines given internally; and, for this purpose, the Peruvian bark has been found to be especially effectual. That this medicine operates by a tonic power, I have endeavoured to prove above (214); and, from what is said in 215, the limitations to be observed in employing it may also be learned. When the gangrene arises from the violence of inflammation, the bark may not only fail of proving a remedy, but may do harm: and its power as a tonic is especially suited to those cases of gangrene which proceed from an original loss of tone, as in the case of palsy and œdema; or to those cases of inflammation where a loss of tone takes place, while the original inflammatory symptoms are removed.

273. The other terminations of inflammation either do not admit of any treatment, except that of preventing them by the means of resolution; or they belong to a treatise of surgery, rather than to this place.

Having thus, therefore, delivered the general doctrine, I proceed now to consider the particular genera and species of inflammation.

It has been hinted above, (263), that the difference of inflammation arises chiefly from the difference of the part affected: I have therefore arranged them, as they are CUTANEOUS, VISCERAL, or ARTICULAR; and in this order they are now to be considered.

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## CHAP. II.

### OF INFLAMMATION, MORE STRICTLY CUTANEOUS.

CUTANEOUS inflammations are of two kinds, commonly distinguished by the names of PHLEGMON and ERYSIPELAS.

Of the latter there are two cases, which ought to be distinguished by different appellations. When the disease is an affection of the skin alone, and very little of the whole system, or when the affection of the system is only symptomatical of the external inflammation, I shall give the disease the name of ERYTHEMA; but when the external inflammation is an exanthema, and symptomatical of an affection of the whole system, I shall then name the disease ERYSIPELAS.

275. It is the erythema only that I am to consider here.

For the distinction between Erythema and Phlegmon, I have formerly referred to the characters given of them in our Nosology. See *Synops. Nosolog. Meth.* Vol. ii, p. 5, gen. vii, spec. 1, and 2. But I think it proper now to deliver the characters of them more fully and exactly here, as follows:

A Phlegmon is an inflammatory affection of the skin, with a swelling, rising generally to a more considerable eminence in the middle of it; of a bright red colour; both the swelling and colour being pretty exactly circumscribed; the whole being attended with a pain of distention, often of a stounding or throbbing kind, and frequently ending in suppuration.

An Erythema, Rose, or S$^{t}$. Anthony's Fire, is an inflammatory affection of the skin, with hardly any evident swelling; of a mixed, and not very bright red colour, readily disappearing upon pressure, but quickly returning again; the redness of no regular circumscription, but spreading unequally, and continuing almost constantly to spread upon the neighbouring part; with a pain like to that from burning; producing blisters, sometimes of a small, sometimes of a larger size; and always ending in a desquamation of the scarf-skin, sometimes in gangrene.

This subject I am not to prosecute here, as properly belonging to surgery, the business of which I am seldom to enter upon in this work; and shall therefore observe only as necessary here, that the difference of these appearances seems to depend on the different seat of the inflammation. In the phlegmon, the inflammation seems to affect especially the vessels on the internal surface of the skin communicating with the lax subjacent cellular texture; whence a more copious effusion, and that of serum convertible into pus, takes place. In the erythema, the inflammation seems to have its seat in the vessels on the external surface of the skin, communicating with the rete mucosum, which does not admit of any effusion, but what separates the cuticle, and gives occasion to the formation of a blister, while the smaller size of the vessels admits only of the effusion of a thin fluid, very seldom convertible into pus.

Besides these differences in the circumstances of these two kinds of inflammation, it is probable that they also differ with respect to their causes. Erythema is the effect of all kinds of acrids externally applied to the skin; and, when arising from an internal cause, it is from an acrimony poured out on the surface of the skin under the cuticle. In the phlegmon, an acrimony is not commonly evident.

276. These differences in the seat and causes of the phlegmon and erythema being admitted, it will be evident that, when an erythema affects any internal part, it can take place in those only whose sur-

faces are covered with an epithelion, or membrane analogous to the cuticle.

277. The same distinction between the seat and causes of the two diseases will, as I judge, readily explain what has been delivered by practical writers, with respect to the cure of these different cutaneous inflammations. But I shall not, however, prosecute this here, for the reason given above (275); and, for the same reason, shall not say any thing of the variety of external inflammation, that might otherwise be considered here.

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## CHAP. III.

### OF OPHTHALMIA, OR INFLAMMATION OF THE EYE.

278. THE inflammation of the eye may be considered as of two kinds; according as it has its seat in the membranes of the ball of the eye, when I would name it OPHTHALMIA MEMBRANARUM; or, as it has its seat in the sebaceous glands placed in the tarsus, or edges of the eye-lids, in which case it may be termed OPHTHALMIA TARSI.

These two kinds are very frequently combined together, as the one may readily excite the other;

but they are still to be distinguished, according as the one or the other may happen to be the primary affection, and properly as they often arise from different causes.

279. The inflammation of the membranes of the eye affects especially, and most frequently, the adnata, appearing in a turgescence of its vessels; so that the red vessels which are naturally there, become not only increased in size, but there appear many more than did in a natural state. This turgescence of the vessels is attended with pain, especially upon the motion of the ball of the eye; and this, like every other irritation applied to the surface of the eye, produces an effusion of tears, from the lachrymal gland.

This inflammation commonly, and chiefly, affects the adnata spread on the anterior part of the bulb of the eye; but usually spreads also along the continuation of that membrane on the inside of the palpebræ; and, as that is extended on the tarsus palpebrarum, the excretories of the sebaceous glands opening there are also frequently affected. When the affection of the adnata is considerable, it is frequently communicated to the subjacent membranes of the eye, and even to the retina itself, which thereby acquires so great a sensibility, that the slightest impression of light becomes painful.

280. The inflammation of the membranes of

the eye is in different degrees, according as the adnata is more or less affected, or according as the inflammation is either of the adnata alone, or of the subjacent membranes also; and, upon these differences, different species have been established, and different appellations given to them. But I shall not, however, prosecute the consideration of these, being of opinion that all the cases of ophthalmia membranarum differ only in degree, and are to be cured by remedies of the same kind, more or less employed.

The remote causes of Ophthalmia are many and various; as,

1, External violence, by blows, contusions and wounds, applied to the eyes; and even very slight impulses applied, while the eye-lids are open, to the ball of the eye itself, are sometimes sufficient for the purpose.

2, Extraneous bodies introduced under the eye lids, either of an acrid quality, as smoke and other acrid vapours, or of a bulk sufficient to impede the free motion of the eye-lids upon the surface of the eye-ball.

3, The application of strong light, or even of a moderate light long continued.

4, The application of much heat, and particularly of that with moisture.

5, Much exercise of the eyes in viewing minute objects.

6, Frequent intoxication.

7, Irritation from other and various diseases of the eyes.

8, An acrimony prevailing in the mass of blood, and deposited in the sebaceous glands on the edges of the eye-lids.

9, A change in the distribution of the blood whereby either a more than usual quantity of blood, and with more than usual force, is impelled into the vessels of the head, or whereby the free return of the venous blood from the vessels of the head is interrupted.

10, A certain consent of the eyes with the other parts of the system, whereby, from a certain state of these parts, either a simultaneous, or an alternating affection of the eyes, is produced.

281. The proximate cause of Ophthalmia is not different from that of inflammation in general; and the different circumstances of Ophthalmia may be explained by the difference of its remote causes, and by the different parts of the eye which it happens to effect. This may be understood from what has been already said; and I shall now therefore proceed to consider the CURE.

282. In the cure of Ophthalmia, the first attention will be always due to the removing of the remote causes, and the various means necessary for this purpose will be directed by the consideration of these causes enumerated above.

The Ophthalmia membranarum requires the remedies proper for inflammation in general; and, when the deeper seated membranes are affected, and especially when a pyrexia is present, large general bleedings may be necessary. But this is seldom the case; as the Ophthalmia, for the most part, is an affection purely local, accompanied with little or no pyrexia. General bleedings, therefore, from the arm or foot, have little or no effect upon it; and the cure is chiefly to be obtained by topical bleedings, that is, blood drawn from vessels near the inflamed part; and opening the jugular vein or the temporal artery, may be considered as in some measure of this kind. It is commonly sufficient to apply a number of leeches round the eye; and it is perhaps better still to draw blood from the temples, by cupping and scarifying. In many cases, a very effectual remedy is, that of scarifying the internal surface of the inferior eye-lid; and more so still, is cutting the turgid vessels upon the adnata itself.

283. Besides blood-letting, purging, as a remedy suited to inflammation in general, has been considered as peculiarly adapted to inflammations in any of the parts of the head, and therefore to Ophthalmia; and it is sometimes useful: but, for the reasons given before with respect to general bleeding, purging in the case of Ophthalmia does not prove useful in any degree in proportion to the evacuation excited.

284. For relaxing the spasm in the part, and taking off the determination of the fluids to it, blistering near the part has commonly been found useful.

285. Electrical sparks taken from the eye will often suddenly discuss the inflammation of the adnata; but the effect is seldom permanent, and even a frequent repetition seldom gives an entire cure.

286. Ophthalmia, as an external inflammation, admits of topical applications. All those, however, that increase the heat, and relax the vessels of the part, prove commonly hurtful; and the admission of cool air to the eye, the proper application of cold water immediately to the ball of the eye, and application of various cooling and astringent medicines, which at the same time do not produce much irritation, prove generally useful: even spiritous liquors, employed in moderate quantity, have often been of service.

287. In the cure of ophthalmia, much care is requisite to avoid all irritation, particularly that of light; and the only safe and certain means of doing this is by confining the patient to a very dark chamber.

288. These are the remedies of the ophthalmia membranarum; and, in the ophthalmia tarsi, so

far as it is produced by the ophthalmia membranarum, the same remedies may be necessary. As, however, the ophthalmia tarsi may often depend upon an acrimony deposited in the sebaceous glands of the part, so it may require various internal remedies according to the nature of the acrimony in fault; for which I must refer to the consideration of scrofula, syphilis, or other diseases with which this ophthalmia may be connected: and, when the nature of the acrimony is not ascertained, certain remedies, more generally adapted to the evacuation of acrimony, such, for instance, as mercury, may be employed.

289. In the ophthalmia tarsi, it almost constantly happens that some ulcerations are formed on the tarsus. These require the application of mercury or copper, either of which may by itself sometimes entirely cure the affection; and these may even be useful when the disease depends upon a fault of the whole system.

290. Both in the Ophthalmia membranarum, and in the Ophthalmia tarsi, it is necessary to obviate that gluing or sticking together of the eye-lids which commonly happens in sleep; and this may be done by insinuating a little of any mild unctous medicine, of some tenacity, between the eye-lids before the patient shall go to sleep.

## CHAP. IV.

### OF PHRENSY OR, PHRENITIS.

291. THIS disease is an inflammation of the parts contained in the cavity of the cranium; and may affect either the membranes of the brain, or the substance of the brain itself. Nosologists have apprehended, that these two cases might be distinguished by different symptoms, and therefore by different appellations: but this does not seem to be confirmed by observation and dissection; and therefore I shall treat of both cases under the title of Phrensy, or Phrenitis.

292. An idiopathic phrensy is a rare occurrence, a sympathic more frequent; and the ascertaining either the one or the other is, upon many occasions, difficult. Many of the symptoms by which the disease is most commonly judged to be present have appeared, when, from certain considerations, it was presumed, and even from dissection it appeared, that there had been no internal inflammation; and, on the other hand, dissections have shewn, that the brain had been inflamed, when few of the peculiar symptoms of phrensy had before appeared.

293. The symptoms, by which this disease may

be most certainly known, are, a vehement pyrexia; a violent deep-seated headach, a redness and turgescence of the face and eyes, an impatience of light or noise, a constant watching and a delirium impetuous and furious. Some nosologists have thought these symptoms peculiar to an inflammation of the membranes, and that the inflammation of the substance of the brain was to be distinguished by some degree of coma attending it. It was for this reason, that, in the Nosology, I added the Typhomania to the character of Phrenitis: but, upon farther reflection, I find no proper foundation for this; and, if we pass from the characters above delivered, there will be no means of fixing the variety that occurs.

I am here, as in other analogous cases, of opinion, that the symptoms above mentioned of an acute inflammation always mark inflammations of membranous parts; and that an inflammation of the paronchyma or substance of viscera, exhibits, at least commonly, a more chronic affection.

294. The remote causes of phrensy are all those which directly stimulate the membranes or substance of the brain; and particularly all those which increase the impetus of the blood in the vessels of the brain. Among these, the exposure of the naked head to the direct rays of a very warm sun, is a frequent cause. The passions of the mind, and certain poisons, are amongst the

remote causes of phrensy; but, in what manner they operate, is not well understood.

295. The cure of phrensy is the same with that of inflammation in general; but, in phrensy, the most powerful remedies are to be immediately employed. Large and repeated blood-letting is especially necessary; and the blood should be drawn from vessels as near as possible to the part affected. The opening of the temporal artery has been recommended, and with some reason: but the practice is attended with inconvenience; and I apprehend that opening the jugular veins may prove more effectual; but, at the same time, it will be generally proper to draw blood from the temples, by cupping and scarifying.

296. It is probable, that purging, as it may operate by revulsion, may be of more use in this than in some other inflammatory affections.

For the same purpose of revulsion, warm pediluvia are a remedy; but, at the same time, somewhat ambiguous. The taking off the force of the blood in the vessels of the head by an erect posture, is generally useful.

297. Shaving of the head is always proper and necessary for the admission of other remedies. Blistering is commonly useful in this disease, but chiefly when applied near to the part affected.

298. Every part of the antiphlogistic regimen is here necessary, and particularly the admission of cold air. Even cold substances, applied close to the head, have been found safe, and highly useful; and the application of such refrigerants as vinegar is certainly proper.

299. It appears to me certain, that opiates are hurtful in every inflammatory state of the brain; and it is to be observed, that, from the ambiguity mentioned in 292, the accounts of practitioners, with regard to the juvantia and lædentia in this disease, are of very uncertain application.

## CHAP. V.

### OF THE QUINSY, OR CYNANCHE.

300. THIS name is applied to every inflammation of the internal fauces; but these inflammations are different, according to the part of the fauces which may be affected, and according to the nature of the inflammation. In the Nosology, therefore, after giving the character of the Cynanche as a genus, I have distinguished five different species, which must here likewise be separately considered.

## SECT. I.

### *Of the Cynanche Tonsillaris.*

301. This is an inflammation of the mucous membrane of the fauces, affecting especially that congeries of mucous follicles which forms the tonsils, and spreading from thence along the velum and uvula, so as frequently to affect every part of the mucous membrane.

302. The disease appears by some tumour, sometimes considerable, and by a redness of the parts; is attended with a painful and difficult deglutition; with a pain sometimes shooting into the ear; with a troublesome clamminess of the mouth and throat; with a frequent, but difficult excretion of mucus; and the whole is accompanied with a pyrexia.

303. This species of quinsy is never contagious. It terminates frequently by resolution, sometimes by suppuration, but hardly ever by gangrene; although, in this disease, some sloughy spots, commonly supposed to be forerunners of gangrene, sometimes appear upon the fauces.

304. This disease is commonly occasioned by cold externally applied, particularly about the neck.

It affects especially the young and sanguine, and a disposition to it is often acquired by habit; so that, from every considerable application of cold to any part of the body, this disease is readily induced. It occurs especially in spring and autumn, when vicissitudes of heat and cold frequently take place. The inflammation and tumour are commonly at first most considerable in one tonsil; and afterwards, abating in that, increase in the other.

305. In the cure of this inflammation, some bleeding may be proper; but large general bleedings will seldom be necessary. The opening of the ranular veins seems to be an insignificant remedy; and leeches set upon the external fauces are of more efficacy.

306. At the beginning of the disease, full vomiting has been frequently found to be of great service.

307. This inflammation may be often relieved by moderate astringents, and particularly by acids applied to the inflamed parts. In many cases, however, nothing has been found to give more relief than the vapour of warm water received into the fauces by a proper apparatus.

308. The other remedies of this disease are rubefacient or blistering medicines, applied externally to the neck; and, with these, the employ-

ment of antiphlogistic purgatives, as well as every part of the antiphlogistic regimen, excepting the application of cold.

309. This disease as we have said, often terminates by resolution frequently accompanied with sweating; which is therefore to be prudently favoured and encouraged.

310. When this disease shall have taken a tendency to suppuration, nothing will be more useful, than the frequent taking into the fauces the steams of warm water. When the abscess is attended with much swelling, if it break not spontaneously, it should be opened by a lancet; and this does not require much caution, as even the inflammatory state may be relieved by some scarification of the tonsils. I have never had occasion to see any case requiring bronchotomy.

## SECT. II.

### *Of the Cynanche Maligna.*

311. This is a contagious disease, seldom sporadic, and commonly epidemic. It attacks persons of all ages, but more commonly those in a young and infant state. It attacks persons of every constitution when exposed to the contagion, but most readily the weak and infirm.

312. This disease is usually attended with a considerable pyrexia; and the symptoms of the accession of this, such as frequent cold shiverings, sickness, anxiety, and vomiting, are often the first appearances of the disease. About the same time, a stiffness is felt in the neck, with some uneasiness in the internal fauces, and some hoarseness of the voice. The internal fauces, when viewed, appear of a deep red colour, with some tumour; but this last is seldom considerable, and deglutition is seldom difficult or painful. Very soon a number of white or ash-coloured spots appear upon the inflamed parts. These spots spread and unite, covering almost the whole fauces with thick sloughs; which falling off, discover ulcerations. While these symptoms proceed in the fauces, they are generally attended with a coryza, which pours out a thin acrid and fetid matter, excoriating the nostrils and lips. There is often also, especially in infants, a frequent purging; and a thin acrid matter flows from the anus, excoriating this and the neighbouring parts.

313. With these symptoms, the pyrexia proceeds with a small, frequent, and irregular pulse; and there occurs a manifest exacerbation every evening, and some remission in the mornings. A great debility appears in the animal functions; and the sensorium is affected with delirium, frequently with coma.

314. On the second day, or sometimes later, efflorescences appear upon the skin, which are sometimes in small points hardly eminent; but, for the most part, in patches of a red colour, spreading and uniting so as to cover the whole skin. They appear first about the face and neck, and in the course of some days spread by degrees to the lower extremities. The scarlet redness is often considerable on the hands and extremities of the fingers, which feel stiff and swelled. This eruption is often irregular, as to the time of its appearance, as to its steadiness, and as to the time of its duration. It usually continues four days, and goes off by some desquamation of the cuticle; but, neither on its first appearance, nor on its desquamation, does it always produce a remission of the pyrexia, or of the other symptoms.

315. The progress of the disease depends on the state of the fauces and of the pyrexia. When the ulcers on the fauces, by their livid and black colour, by the fetor of the breath, and by many marks of acrimony in the fluids, shew a tendency to gangrene, this takes place to a considerable degree; and, the symptoms of a putrid fever constantly increasing, the patient dies, often on the third day, sometimes later, but for the most part before the seventh. The acrimony poured out from the diseased fauces must necessarily, in part, pass into the pharynx, and there spread the infec-

tion into the œsophagus, and sometimes through the whole of the alimentary canal, propagating the putrefaction, and often exhausting the patient by a frequent diarrhœa.

The acrid matter poured out in the fauces being again absorbed, frequently occasions large swellings of the lymphatic glands about the neck, and sometimes to such a degree as to occasion suffocation.

It is seldom that the organs of respiration escape entirely unhurt, and very often the inflammatory affection is communicated to them. From dissections it appears, that, in the cynanche maligna, the larynx and trachea are often affected in the same manner as in the cynanche trachealis; and it is probable that, in consequence of that affection, the cynanche maligna often proves fatal by such a sudden suffocation as happens in the proper cynanche trachealis; but there is reason to suspect, that, upon this subject, dissectors have not always distinguished properly between the two diseases.

316. These are the several fatal terminations of the cynanche maligna; but they do not always take place. Sometimes the ulcers of the fauces are of a milder nature; and the fever is more moderate, as well as of a less putrid kind: and when, upon the appearance of the efflorescence on the skin, the fever suffers a remission; when

the efflorescence continues for three or four days, till it has spread over the whole body, and then ends by a desquamation, giving a further remission of the fever; this often entirely terminates by gentle sweats, on or before the seventh day; and the rest of the disease terminates in a few days more, by an excretion of sloughs from the fauces; while sleep, appetite, and the other marks of health, return.

From what is said in this, and the preceding paragraph, the prognostics in this disease may be readily learned.

317. In the cure of this disease, its septic tendency is chiefly to be kept in view. The debility, with which it is attended, renders all evacuation by bleeding and purging improper, except in a few instances, where the debility is less, and the inflammatory symptoms more considerable. The fauces are to be preserved from the effects of the acrid matter poured out upon them, and are therefore to be frequently washed out by antiseptic gargles or injections; and the septic tendency of the whole system should be guarded against and corrected by internal antiseptics, especially by the Peruvian bark given in substance, from the beginning, and continued through the course of the disease. Emetics, both vomiting and nauseating, prove useful, especially when employed early in the disease. When any considerable tumour

occurs, blisters applied externally will be of service, and, in any case, may be fit to moderate the internal inflammation.

## SECT. III.

### *Of the Cynanche Trachealis.*

318. This name has been given to an inflammation of the glottis, larynx, or upper part of the trachea, whether it affect the membranes of these parts, or the muscles adjoining. It may arise first in these parts, and continue to subsist in them alone; or it may come to affect these parts from the cynanche tonsillaris or maligna spreading into them.

319. In either way it has been a rare occurrence; and few instances of it have been marked and recorded by physicians. It is to be known by a peculiar ringing sound of the voice, by difficult respiration, with a sense of straitening about the larynx, and by a pyrexia attending it.

320. From the nature of these symptoms, and from the dissection of the bodies of persons who have died of this disease, there is no doubt of its being of an inflammatory nature. It does not, however, always run the course of inflammatory affections, but frequently produces such an ob-

struction of the passage of the air, as suffocates, and thereby proves suddenly fatal.

321. If we judge rightly of the nature of this disease, it will be obvious, that the cure of it requires the most powerful remedies of inflammation, to be employed upon the very first appearance of the symptoms. When a suffocation is threatened, whether any remedies can be employed to prevent it, we have not had experience to determine.

322. The accounts which books have hitherto given us of inflammations of the larynx, and the parts connected with it, amount to what we have now said; and the instances recorded have almost all of them happened in adult persons; but there is a peculiar affection of this kind happening especially to infants, which till lately has been little taken notice of. Dr. Home is the first who has given any distinct account of it; but, since he wrote, several other authors have taken notice of it, (see MICHAELIS *De angina polyposa sive membranacea, Argentorati* 1778); and have given different opinions with regard to it. Concerning this diversity of opinions, I shall not at present inquire; but shall deliver the history and cure of this disease, in so far as they have arisen from my own observation, from that of Dr. Home, and of other skilful persons in this neighbourhood.

323. This disease seldom attacks infants till after they have been weaned. After this period, the younger they are, the more they are liable to it. The frequency of it becomes less as children become more advanced; and there are no instances of children above twelve years of age being affected with it. It attacks children of the midland countries, as well as those who live near the sea. It does not appear to be contagious; and its attacks are frequently repeated in the same child. It is often manifestly the effect of cold applied to the body; and therefore appears most frequently in the winter and spring seasons. It very commonly comes on with the ordinary symptoms of a catarrh; but sometimes the peculiar symptoms of the disease shew themselves at the very first.

324. These peculiar symptoms are the following:—A hoarseness, with some shrillness and ringing sound, both in speaking and coughing, as if the noise came from a brazen tube. At the same time, there is a sense of pain about the larynx, some difficulty of respiration, with a whizzing sound in inspiration, as if the passage of the air were straitened. The cough which attends it is commonly dry; and, if any thing be spit up, it is a matter of a purulent appearance, and sometimes films resembling portions of a membrane. Together with these symptoms, there is a frequency of pulse, a restlessness, and an uneasy sense of

heat. When the internal fauces are viewed, they are sometimes without any appearance of inflammation; but frequently a redness, and even swelling, appear: and sometimes in the fauces there is an appearance of matter like to that rejected by coughing. With the symptoms now described, and particularly with great difficulty of breathing, and a sense of strangling in the fauces, the patient is sometimes suddenly taken off.

325. There have been many dissections made of infants who had died of this disease; and almost constantly there has appeared a preternatural membrane lining the whole internal surface of the upper part of the trachea, and extending in the same manner downwards into some of its ramifications. This preternatural membrane may be easily separated, and sometimes has been found separated in part, from the subjacent proper membrane of the trachea. This last is commonly found entire, that is, without any appearance of erosion or ulceration; but it frequently shews the vestiges of inflammation, and is covered by a matter resembling pus, like to that rejected by coughing; and very often a matter of the same kind is found in the bronchiæ, sometimes in considerable quantity.

326. From the remote causes of this disease; from the catarrhal symptoms commonly attending

it; from the pyrexia constantly present with it; from the same kind of preternatural membrane being found in the trachea when the cynanche maligna is communicated to it; and, from the vestiges of inflammation on the trachea discovered upon dissection; we must conclude, that the disease consists in an inflammatory affection of the mucous membrane of the larynx and trachea, producing an exudation analogous to that found on the surface of inflamed viscera, and appearing partly in a membranous crust, and partly in a fluid resembling pus.

327. Though this disease manifestly consists of an inflammatory affection, it does not commonly end either in suppuration or gangrene. The peculiar and troublesome circumstance of the disease seems to consist in a spasm of the muscles of the glottis, which, by inducing a suffocation, prevents the common consequences of inflammation.

328. When this disease terminates in health, it is by a resolution of the inflammation, by a ceasing of the spasm of the glottis, by an expectoration of the matter exuding from the trachea, and of the crusts formed there; and frequently it ends without any expectoration, or at least with such only as attends an ordinary catarrh.

329. When the disease ends fatally, it is by a

suffocation; seemingly, as we have said, depending upon a spasm affecting the glottis; but sometimes, probably, depending upon a quantity of matter filling the bronchiæ.

330. As we suppose the disease to be an inflammatory affection, so we attempt the cure of it by the usual remedies of inflammation, and which, for the most part, I have found effectual. Bleeding, both general and topical, has often given immediate relief; and, by being repeated, has entirely cured the disease. Blistering also, near to the part affected, has been found useful. Upon the first attack of the disease, vomiting, immediately after bleeding, seems to be of considerable use, and sometimes suddenly removes the disease. In every stage of the disease, the antiphlogistic regimen is necessary, and particularly the frequent use of laxative glysters. Though we suppose that a spasm affecting the glottis is often fatal in this disease, I have not found antispasmodic medicines to be of any use.

## SECT. IV.

### *Of the Cynanche Pharyngæa.*

331. In the Cynanche tonsillaris, the inflammation of the mucous membrane often spreads upon the pharynx, and into the beginning of the œso-

phagus, and thereby renders deglutition more difficult and uneasy; but such a case does not require to be distinguished as a different species from the common cynanche tonsillaris; and only requires that blood-letting, and other remedies, should be employed with greater diligence than in ordinary cases. We have never seen any case in which the inflammation began in the pharynx, or in which this part alone was inflamed: but practical writers have taken notice of such a case; and to them, therefore, I must refer, both for the appearances which distinguish it, and for the method of cure.

## SECT. V.

### *Of the Cynanche Parotidæa.*

332. This is a disease known to the vulgar, and among them has got a peculiar appellation, in every country of Europe; but has been little taken notice of by medical writers. It is often epidemic, and manifestly contagious. It comes on with the usual symptoms of pyrexia, which is soon after attended with a considerable tumour of the external fauces and neck. This tumour appears first as a glandular moveable tumour at the corner of the lower jaw; but the swelling soon becomes uniformly diffused over a great part of the neck, sometimes on one side only, but more commonly

on both. The swelling continues to increase till the fourth day; but from that period it declines, and in a few days more passes off entirely. As the swelling of the fauces recedes, some tumour affects the testicles in the male sex, or the breasts in the female. These tumours are sometimes large, hard, and somewhat painful; but in this climate, are seldom either very painful, or of long continuance. The pyrexia attending this disease is commonly slight, and recedes with the swelling of the fauces; but sometimes, when the swelling of the testicles does not succeed to that of the fauces, or when the one or the other has been suddenly repressed, the pyrexia becomes more considerable, is often attended with delirium, and has sometimes proved fatal.

333. As this disease commonly runs its course without either dangerous or troublesome symptoms, so it hardly requires any remedies. An antiphlogistic regimen, and avoiding cold, are all that will be commonly necessary. But when, upon the receding of the swellings of the testicles in males, or of the breasts in females, the pyrexia comes to be considerable, and threatens an affection of the brain, it will be proper, by warm fomentations, to bring back the swelling; and, by vomiting, bleeding, or blistering, to obviate the consequences of its absence.

## CHAP. VI.

### OF PNEUMONIA, OR PNEUMONIC INFLAMMATION.

334. UNDER this title I mean to comprehend the whole of the inflammations affecting either the viscera of the thorax, or the membrane lining the interior surface of that cavity: for neither do our diagnostics serve to ascertain exactly the seat of the disease; nor does the difference in the seat of the disease, exhibit any considerable variation in the state of the symptoms, nor lead to any difference in the method of cure.

335. Pneumonic inflammation, however various in its seat, seems to me to be always known and distinguished by the following symptoms: pyrexia, difficult breathing, cough, and pain in some part of the thorax. But these symptoms are, on different occasions, variously modified.

336. The disease almost always comes on with a cold stage, and is accompanied with the other symptoms of pyrexia; though, in a few instances, the pulse may not be more frequent, nor the heat of the body increased beyond what is natural. Sometimes the pyrexia is from the beginning ac-

companied with the other symptoms; but frequently it is formed for some hours before the other symptoms become considerable, and particularly before the pain be felt. For the most part, the pulse is frequent, full, strong, hard, and quick; but, in a few instances, especially in the advanced state of the disease, the pulse is weak and soft, and at the same time irregular.

337. The difficulty of breathing is always present, and most considerable in inspiration; both because the lungs do not easily admit of a full dilatation, and because the dilatation aggravates the pain attending the disease. The difficulty of breathing is also greater when the patient is in one posture of his body rather than another. It is generally greater when he lies upon the side affected; but sometimes the contrary happens. Very often the patient cannot lie easy upon either side, finding ease only when lying on his back; and sometimes he cannot breathe easily, except when in somewhat of an erect posture.

338. A cough always attends this disease; but, in different cases, is more or less urgent and painful. It is sometimes dry, that is, without any expectoration, especially in the beginning of the disease; but more commonly it is, even from the first, moist, and the matter spit up various, both

in consistence and colour, and frequently it is streaked with blood.

339. The pain attending this disease is, in different cases, felt in different parts of the thorax, but most frequently in one side. It has been said to affect the right side more frequently than the left; but this is not certain; while, on the other hand, it is certain that the left side has been very often affected. The pain is felt sometimes as if it were under the sternum; sometimes in the back between the shoulders, and, when in the sides, its place has been higher or lower, more forward or backward: but the place of all others most frequently affected is about the sixth or seventh rib, near the middle of its length, or a little more forward. The pain is often severe and pungent; but sometimes more dull and obtuse, with a sense of weight rather than of pain. It is most especially severe and pungent when occupying the place last mentioned. For the most part, it continues fixed in one place; but sometimes shoots from the side to the scapula on one hand, or to the sternum and clavicle on the other.

340. The varying state of symptoms now mentioned does not always ascertain precisely the seat of the disease. To me it seems probable, that the disease is always seated, or at least begins, in some part of the pleura; taking that membrane in its

greatest extent, as now commonly understood; that is, as covering not only the internal surface of the cavity of the thorax, but also as forming the mediastinum, and as extended over the pericardium, and over the whole surface of the lungs.

341. There is, therefore, little foundation for distinguishing this disease by different appellations taken from the part which may be supposed to be chiefly affected. The term pleurisy, might with propriety be applied to every case of the disease; and has been very improperly limited to that inflammation which begins in, and chiefly affects, the *pleura costalis*. I have no doubt that such a case does truly occur: but, at the same time, I apprehend it to be a rare occurrence; and that the disease much more frequently begins in, and chiefly affects, the pleura investing the lungs, producing all the symptoms supposed to belong to what has been called the *Pleuritis vera*.

342. Some physicians have imagined, that there is a case of pneumonic inflammation particularly entitled to the appellation of *Peripneumony*; and that is, the case of an inflammation beginning in the parenchyma, or cellular texture of the lungs, and having its seat chiefly there. But it seems to me very doubtful, if any acute inflammation of the lungs, or any disease which has been called peripneumony, be of that kind. It seems probable;

that every acute inflammation begins in membranous parts; and, in every dissection of persons dead of peripneumony, the external membrane of the lungs, or some part of the pleura, has appeared to have been considerably affected.

343. An inflammation of the pleura covering the upper surface of the diaphragm, has been distinguished by the appellation of *Paraphrenitis*, as supposed to be attended with the peculiar symptoms of delirium, risus sardonicus, and other convulsive motions: but it is certain, that an inflammation of that portion of the pleura, and affecting also even the muscular substance of the diaphragm, has often taken place without any of these symptoms; and I have not met with either dissections, or any accounts of dissections, which support the opinion, that an inflammation of the pleura covering the diaphragm is attended with delirium more commonly than any other pneumonic inflammation.

344. With respect to the seat of pneumonic inflammation, I must observe further, that, although it may arise and subsist chiefly in one part of the pleura only, it is however frequently communicated to other parts of the same, and commonly communicates a morbid affection through its whole extent.

345. The remote cause of pneumonic inflam-

mation is, commonly, cold applied to the body, obstructing perſpiration, and determining to the lungs; while, at the same time, the lungs themselves are exposed to the action of cold. These circumstances operate especially when an inflammatory diathesis prevails in the system; and, consequently, upon persons of the greatest vigour; in cold climates; in the winter season; and particularly in the spring, when vicissitudes of heat and cold are frequent. The disease, however, may arise in any season when such vicissitudes occur.

Other remote causes also may have a share in this matter; such as, every means of obstructing, straining, or otherwise injuring, the pneumonic organs.

Pneumonic inflammation may happen to persons of any age, but rarely to those under the age of puberty; and most commonly it affects persons somewhat advanced in life, as those between forty-five and sixty years; those, too, especially of a robust and full habit.

The pneumonic inflammation has been sometimes so much an epidemic, as to occasion a suspicion of its depending upon a specific contagion; but I have not met with any evidence in proof of this.—See Morgagni de causis et sedibus morborum, epist. xxi, art. 26.

346. The pneumonic, like other inflammations, may terminate by resolution, suppuration, or gan-

grene; but it has also a termination peculiar to itself, as has been hinted above, (258); and that is, when it is attended with an effusion of blood into the cellular texture of the lungs, which soon interrupting the circulation of the blood through this viscus, produces a fatal suffocation. This, indeed, seems to be the most common termination of pneumonic inflammation, when it ends fatally; for, upon the dissection of almost every person dead of the disease, it has appeared that such an effusion had happened.

347. From these dissections also we learn, that pneumonic inflammation commonly produces an exudation from the internal surface of the pleura; which appears partly as a soft viscid crust, often of a compact, membranous form, covering everywhere the surface of the pleura, and particularly those parts where the lungs adhere to the pleura costalis, or mediastinum; and this crust seems always to be the cement of such adhesions.

The same exudation shews itself also by a quantity of a serous whitish fluid, commonly found in the cavity of the thorax; and some exudation or effusion is usually found to have been made likewise into the cavity of the pericardium.

348. It seems probable, too, that a like effusion is sometimes made into the cavity of the bronchiæ; for, in some persons who have died after labour-

ing under a pneumonic inflammation for a few days only, the bronchiæ have been found filled with a considerable quantity of a serous and thickish fluid; which, I think, must be considered rather as the effusion mentioned, having had its thinner parts taken off by respiration, than as a pus so suddenly formed in the inflamed part.

349. It is, however, not improbable, that this effusion, as well as that made into the cavities of the thorax and pericardium, may be a matter of the same kind with that which, in other inflammations, is poured into the cellular texture of the parts inflamed, and there converted into pus; but, in the thorax and pericardium, it does not always assume that appearance, because the crust covering the surface, prevents the absorption of the thinner part. This absorption, however, may be compensated in the bronchiæ by the drying power of the air; and therefore the effusion into them may put on a more purulent appearance.

In many cases of pneumonic inflammation, when the SPUTA are very copious, it is difficult to suppose that the whole of them proceed from the mucous follicles of the bronchiæ. It seems more probable, that a great part of them may proceed from the effused serous fluid we have been mentioning; and this, too, will account for the sputa being so often of a purulent appearance. Perhaps the same thing may account for that purulent expectoration, as well as that purulent matter found in the bronchiæ, which the learned Mr. de Haen says he had often observed, when there was no ulceration of the lungs: and this explanation is at least more probable than Mr. de Haen's supposition of a pus formed in the circulating blood.

350. To conclude this subject, it would appear that the effusion into the bronchiæ, which we have mentioned, often concurs with the effusion of red blood in occasioning the suffocation, which fatally terminates pneumonic inflammation; that the effusion of serum alone may have this effect; and that the serum poured out in a certain quantity, rather than any debility in the powers of expectoration, is the cause of that ceasing of expectoration which very constantly precedes the fatal event. For, in many cases, the expectoration has ceased, when no other symptoms of debility have appeared, and when, upon dissection, the bronchiæ have been found full of liquid matter. Nay, it is even probable, that, in some cases, such an effusion may take place; without any symptoms of violent inflammation; and, in other cases, the effusion taking place may seem to remove the symptoms of inflammation which had appeared before, and thus account for those unexpected fatal terminations which have sometimes happened. Possibly this effusion may account also for many of the phenomena of the Peripneumonia Notha.

351. Pneumonic inflammation seldom terminates by resolution, without being attended with some evident evacuation. An hemorrhagy from the nose happening upon some of the first days of the disease, has sometimes put an end to it; and it is said, that an evacuation from the hemorrhodial veins, a bilious evacuation by stool, and an evacuation of urine with a copious sediment, have severally had the same effect; but such occurrences have been rare and unusual.

The evacuation most frequently attending, and seeming to have the greatest effect in promoting resolution, is an expectoration of a thick white or yellowish matter, a little streaked with blood, copious, and brought up without either much or violent coughing.

Very frequently the resolution of this disease is attended with, and perhaps produced by, a sweat, which is warm, fluid, copious over the whole body, and attended with an abatement of the frequency of the pulse, of the heat of the body, and of other febrile symptoms.

352. The prognostics in this disease are formed from observing the state of the principal symptoms.

A violent pyrexia is always dangerous.

The danger, however, is chiefly denoted by the difficulty of breathing. When the patient can lie on one side only; when he can lie on neither side, but upon his back only; when he cannot breathe with tolerable ease, except the trunk of his body be erect; when, even in this posture, the breathing is very difficult, and attended with a turgescence and flushing of the face, together with partial sweats about the head and neck, and an irregular pulse; these circumstances mark the difficulty of breathing in progressive degrees, and consequently, in proportion, the danger of the disease.

A frequent violent cough, aggravating the pain, is always the symptom of an obstinate disease.

As I apprehend that the disease is hardly ever resolved, without some expectoration, so a dry cough must be always an unfavourable symptom.

As the expectoration formerly described marks that the disease is proceeding to a resolution; so an expectoration which has not the conditions there mentioned, must denote at least a doubtful state of the disease; but the marks taken from the colour of the matter are for the most part fallacious.

An acute pain, very much interrupting inspiration, is always the mark of a violent disease; though not of one more dangerous than an obtuse pain, attended with very difficult respiration.

When the pains, which at first had affected one side only, have afterwards spread into the other; or when, leaving the side first affected, they entirely pass into the other, these are always marks of an increasing, and therefore of a dangerous disease.

A delirium coming on during a pneumonic inflammation, is constantly a symptom denoting much danger.

353. When the termination of this disease proves fatal, it is on one or other of the days of the first week, from the third to the seventh. This is the most common case; but, in a few instances, death has happened at a later period of the disease.

When the disease is violent, but admitting of resolution, this also happens frequently in the course of the first week; but, in a more moderate state of the disease, the resolution is often delayed to the second week.

The disease, on some of the days from the third to the seventh, generally suffers a remission; which, however, may be often fallacious, as the disease does sometimes return again with as much violence as before, and then with great danger.

Sometimes the disease disappears on the second or third day, while an erysipelas makes its appearance on some external part; and, if this continue fixed, the pneumonic inflammation does not recur.

354. Pneumonia, like other inflammations, often ends in suppuration or gangrene.

355. When a pneumonia, with symptoms neither very violent nor very slight, has continued

for many days, it is to be feared it will end in a suppuration. This, however, is not to be determined precisely by the number of days: for, not only after the fourth, but even after the tenth day, there have been examples of a pneumonia ending by a resolution; and, if the disease has suffered some intermission, and again recurred, there may be instances of a resolution happening at a much later period from the beginning of the disease, than that just now mentioned.

356. But, if a moderate disease, in spite of proper remedies employed, be protracted to the fourteenth day without any considerable remission, a suppuration is pretty certainly to be expected; and it will be still more certain, if no signs of resolution have appeared, or if an expectoration which had appeared shall have again ceased, and the difficulty of breathing has continued or increased, while the other symptoms have rather abated.

357. That in a pneumonia, the effusion is made, which may lay the foundation of a suppuration, we conclude from the difficulty of breathing becoming greater when the patient is in a horizontal posture, or when he can lie more easily upon the affected side.

358. That, in such cases, a suppuration has

actually begun, may be concluded from the patient's being frequently affected with slight cold shiverings, and with a sense of cold felt sometimes in one, and sometimes in another part of the body. We form the same conclusion also from the state of the pulse, which is commonly less frequent and softer, but sometimes quicker and fuller, than before.

359. That a suppuration is already formed, may be inferred from there being a considerable remission of the pain which had before subsisted, while, alongst with this, the cough, and especially the dyspnœa, continue, and are rather augmented. At the same time, the frequency of the pulse is rather increased; the feverish state suffers considerable exacerbations every evening, and by degrees a hectic, in all its circumstances, comes to be formed.

360. The termination of pneumonia by gangrene, is much more rare than has been imagined; and, when it does occur, it is usually joined with the termination by effusion (346); and the symptoms of the one are hardly to be distinguished from those of the other.

361. The cure of pneumonic inflammation must proceed upon the general plan (264); but the importance of the part affected, and the danger to

which it is exposed, require that the remedies be fully, as well as early, employed.

362. The remedy chiefly to be depended upon, is that of bleeding at the arm; which will be performed with most advantage in the arm of the side affected, but may be done in either arm, as may be most convenient for the patient or the surgeon. The quantity drawn must be suited to the violence of the disease, and to the vigour of the patient; and generally ought to be as large as this last circumstance will allow. The remission of pain, and the relief of respiration, during the flowing of the blood, may limit the quantity to be then drawn; but, if these symptoms of relief do not appear, the bleeding should be continued till the symptoms of a beginning syncope come on. It is seldom that one bleeding, however large, will prove a cure of this disease; and although the pain and difficulty of breathing may be much relieved by the first bleeding, these symptoms commonly, and after no long interval, recur; often with as much violence as before. In the event of such recurrence, the bleeding is to be repeated, even in the course of the same day, and perhaps to the same quantity as before.

Sometimes the second bleeding may be larger than the first. There are persons, who by their constitution, are ready to faint even upon a small bleeding; and, in such persons, this may prevent the drawing so much blood at first as a pneumonic inflammation might require; but, as the same persons are often found to bear after-bleedings better than the first, this allows the second and subsequent bleedings to be larger, and to such a quantity as the symptoms of the disease may seem to demand.

363. It is according to the state of the symptoms that bleedings are to be repeated; and they will be more effectual when practised in the course of the first three days then afterwards; but they are not to be omitted although four days of the disease may have already elapsed. If the physician shall not have been called in sooner; or if the bleedings practised during the first days shall not have been large enough, or even although these bleedings shall have procured some remission; yet, upon the recurrence of the urgent symptoms, the bleeding should be repeated at any period of the disease, especially within the first fortnight; and even afterwards, if a tendency to suppuration be not evident, or if, after a seeming solution, the disease shall have again returned.

364. With respect to the quantity of blood which ought, or which with safety may be taken away, no general rules can be delivered, as it must be very different, according to the state of the disease, and the constitution of the patient. In

an adult male of tolerable strength, a pound of blood avoirdupois is a full bleeding. Any quantity above twenty ounces is a large, and any quantity below twelve a small bleeding. A quantity of from four to five pounds, in the course of two or three days, is generally as much as such patients will safely bear; but, if the intervals between the bleeding and the whole of the time during which the bleedings have been employed have been long, the quantity taken upon the whole may be greater.

365. When a large quantity of blood has been already taken from the arm, and when it is doubtful if more can with safety be drawn in that manner, some blood may still be taken by cupping and scarifying. Such a measure will be more particularly proper, when the continuance or recurrence of pain, rather than the difficulty of breathing, becomes the urgent symptom; and then the cupping and scarifying should be made as near to the pained part as can conveniently be done.

366. An expectoration takes place sometimes very early in this disease: but if, notwithstanding that, the urgent symptoms should still continue, the expectoration must not supersede the bleedings mentioned; and, during the first days of the disease, its solution is not to be trusted to the expectoration alone. It is in a more advanced stage

only, when the proper remedies have been before employed, and when the symptoms have suffered a considerable remission, that the entire cure may be trusted to a copious and free expectoration.

367. During the first days of the disease, I have not found that bleeding stops expectoration. On the contrary, I have often observed bleeding promote it; and it is in a more advanced stage of the disease only, when the patient, by large evacuations and the continuance of the disease, has been already exhausted, that bleeding seems to stop expectoration. It appears to me that even then bleeding does not stop expectoration, so much by weakening the powers of expectoration, as by favouring the serous effusion into the bronchiæ (348), and thereby preventing it.

368. While the bleedings we have mentioned shall be employed, it will be necessary to employ also every part of the antiphlogistic regimen (130, 132), and particularly to prevent the irritation which might arise from any increase of heat. For this purpose it will be proper to keep the patient out of bed, while he can bear it easily; and, when he cannot, to cover him very lightly while he lies in bed. The temperature of his chamber ought not to exceed sixty degrees of Fahrenheit's thermometer; and whether it may be at any time colder, I am uncertain.

369. Mild and diluent drinks, moderately tepid, at least never cold, given by small portions at a time, ought to be administered plentifully. These drinks may be impregnated with vegetable acids. They may be properly accompanied also with nitre, or some other neutrals; but these salts should be given separately from the drink.

It has been alleged, that both acids and nitre are ready to excite coughing; and in some persons they certainly have this effect; but, except in persons of a peculiar habit, I have not found their effects in exciting cough so considerable or troublesome as to prevent our seeking the advantages otherwise to be obtained from these medicines.

370. Some practitioners have doubted if purgatives can be safely employed in this disease; and indeed a spontaneous diarrhœa occurring in the beginning of the disease, has seldom proved useful: but I have found the moderate use of cooling laxatives generally safe; and have always found it useful to keep the belly open, by frequent emollient glysters.

371. To excite full vomiting by emetics, I judge to be a dangerous practice in this disease: but I have found it useful to exhibit nauseating doses; and, in a somewhat advanced state of the disease, I have found such doses prove the best means of promoting expectoration.

372. Fomentations and poultices applied to the pained part have been recommended, and may be useful; but the application of them is often inconvenient, and may be entirely omitted for the sake of the more effectual remedy, blistering.

Very early in the disease, a blister should be applied as near to the pained part as possible. But as, when the irritation of a blister is present, it renders bleeding less effectual; so the application of the blister should be delayed till a bleeding shall have been employed. If the disease be moderate, the blister may be applied immediately after the first bleeding; but, if the disease be violent, and it is presumed that a second bleeding may be necessary soon after the first, it will then be proper to delay the blister till after the second bleeding, when it may be supposed that any farther bleeding may be postponed till the irritation arising from the blister shall have ceased. It may be frequently necessary in this disease to repeat the blistering: and, in that case, the plasters should always be applied somewhere on the thorax; for, when applied to more distant parts, they have little effect. The keeping the blistered parts open, and making what is called a perpetual blister, has much less effect than a fresh blistering.

373. As this disease often terminates by an expectoration, so, various means of promoting this have been proposed: but none of them appear to

be very effectual; and some of them, being acrid stimulant substances, cannot be very safe.

The gums usually employed seem too heating: squills seem to be less so; but they are not very powerful, and sometimes inconvenient, by the constant nausea they induce.

The volatile alkali may be of service as an expectorant; but it should be reserved for an advanced state of the disease.

Mucilaginous and oily demulcents appear to be useful, by allaying that acrimony of the mucus which occasions too frequent coughing; and which coughing prevents the stagnation and thickening of the mucus, and thereby its becoming mild.

The receiving into the lungs the steams of warm water impregnated with vinegar, has often proved useful in promoting expectoration.

But of all other remedies, the most powerful for this purpose are antimonial medicines, given in nauseating doses, as in 179. Of these, however, I have not found the kermes mineral more efficacious than emetic tartar, or antimonial wine; and the dose of the kermes is much more uncertain than that of the others.

374. Though a spontaneous sweating often proves the crisis of this disease, it ought not to be excited by art, unless with much caution. At least, I have not yet found it either so effectual or safe, as some writers have alleged. When, after

some remission of the symptoms, spontaneous sweats of a proper kind arise, they may be encouraged; but it ought to be without much heat, and without stimulant medicines. If, however, the sweats be partial and clammy only, and a great difficulty of breathing still remain, it will be very dangerous to encourage them.

375. Physicians have differed much in opinion with regard to the use of opiates in pneumonic inflammation. To me it appears, that, in the beginning of the disease, and before bleeding and blistering have produced some remission of the pain and of the difficulty of breathing, opiates have a very bad effect, by their increasing the difficulty of breathing, and other inflammatory symptoms. But in a more advanced state of the disease, when the difficulty of breathing has abated, and when the urgent symptom is a cough, proving the chief cause of ths continuance of the pain, and of the want of sleep, opiates may be employed with great advantage and safety. The interruption of the expectoration, which they seem to occasion, is for a short time only; and they seem often to promote it, as they occasion a stagnation of what was by frequent coughing dissipated insensibly, and therefore give the appearance of what physicians have called Concocted Matter.

## CHAP. VII.

### OF THE PERIPNEUMONIA NOTHA, or BASTARD PERIPNEUMONY.

376. A DISEASE under this name is mentioned in some medical writings of the sixteenth century; but it is very doubtful if the name was then applied to the same disease to which we now apply it. It appears to me, that unless some of the cases described under the title of Catarrhus suffocativus be supposed to have been of the kind I am now to treat of, there was no description of this disease given before that by Sydenham, under the title I have employed here.

377. After Sydenham, Boerhaave was the first who in a system took notice of it as a distinct disease; and he has described it in his aphorisms, although with some circumstances different from those in the description of Sydenham. Of late, Mr. Lieutaud has with great confidence asserted, that Sydenham and Boerhaave had, under the same title, described different diseases; and that, perhaps, neither of them had, on this subject, delivered any thing but hypothesis.

378. Notwithstanding this bold assertion, I am

humbly of opinion, and the Baron Van Sweiten seems to have been of the same, that Sydenham and Boerhaave did describe, under the same title, one and the same disease. Nay, I am further of opinion, that the disease described by Mr. Lieutaud himself is not essentially different from that described by both the other authors. Nor will the doubts of the very learned but modest Morgagni, on this subject disturb us, if we consider that, while very few describers of diseases either have it in their power, or have been sufficiently attentive in distinguishing between the essential and accidental symptoms of disease; so, in a disease which may have not only different, but a greater number of symptoms, in one person than it has in another, we need not wonder, that the descriptions of the same disease by different persons should come out in some respects different. I shall, however, enter no further into this controversy, but endeavour to describe the disease as it has appeared to myself; and, as I judge, in the essential symptoms, much the same as it has appeared to all the other authors mentioned.

379. This disease appears at the same seasons that other pneumonic and catarrhal affections commonly do; that is, in autumn and in spring. Like these diseases also, it is seemingly occasioned by sudden changes of the weather from heat to cold. It appears also, during the prevalence of conta-

gious catarrh; and it is frequently under the form of the peripneumonia notha, that these catarrhs prove fatal to elderly persons.

This disease attacks most commonly persons somewhat advanced in life, especially those of a full phlegmatic habit; those who have before been frequently liable to catarrhal affections; and those who have been much addicted to the large use of fermented and spiritous liquors.

The disease commonly comes on with the same symptoms as other febrile diseases; that is, with alternate chills and heats; and the symptoms of pyrexia are sometimes sufficiently evident; but in most cases these are very moderate, and in some hardly at all appear. With the first attack of the disease, a cough comes on, usually accompanied with some expectoration; and in many cases, there is a frequent throwing up of a considerable quantity of a viscid opaque mucus. The cough often becomes frequent and violent; is sometimes accompanied with a rending headach; and as in other eases of cough, a vomiting is sometimes excited by it. The face is sometimes flushed; and some giddiness or drowsiness often attends the disease. A difficulty of breathing, with a sense of oppression, or straitening in the chest, with some obscure pains there, and a sense of lassitude over the whole body, very constantly attend this disease. The blood drawn in this disease shews a buffy surface, as in other inflammatory affections.

The disease has often the appearance only of a more violent catarrh, and after the employment of some remedies, is entirely relieved by a free and copious expectoration. In other cases, however, the feverish and catarrhal symptoms are at first very moderate, and even slight; but after a few days these symptoms suddenly become considerable, and put an end to the patient's life, when the indications of danger were before very little evident.

380. From the different circumstances in which this disease appears, the pathology of it is difficult. It is certainly often no other at first than a catarrhal affection, which, in elderly persons, is frequently attended with a large afflux of mucus to the lungs; and it was on this footing, that Sydenham considered it as only differing in degree from his *Febris Hyemalis*. A catarrh, however, is strictly an affection of the mucous membrane and follicles of the bronchiæ alone: but it may readily have, and frequently has, a degree of pneumonic inflammation joined to it; and in that case may prove more properly the peculiar disease we treat of here. But, further, as pneumonic inflammation very often produces an effusion of serum into the bronchiæ (348), so this, in elderly persons, may occur in consequence of a slight degree of inflammation; and, when it does happen, will

give the exquisite and fatal cases of the peripneumonia notha.

381. After this attempt to establish the pathology, the method of cure in the different circumstances of the disease will not be difficult.

In case the fever, catarrhal and pneumonic symptoms are immediately considerable, a blood-letting will certainly be proper and necessary: but, where these symptoms are moderate, a blood-letting will hardly be requisite; and, when an effusion is to be feared, the repetition of blood-letting may prove extremely hurtful.

In all cases, the remedies chiefly to be depended upon are vomiting and blistering. Full vomiting may be frequently repeated; and nauseating doses ought to be constantly employed.

Purging may perhaps be useful; but, as it is seldom so in pneumonic affections, nothing but gentle laxatives are here necessary.

In all the circumstances of this disease, the antiphlogistic regimen is proper: cold is to be guarded against; but much external heat is to be as carefully avoided.

382. If a person sweats easily, and it can be brought out by the use of mild tepid liquors only, the practice may in such persons be tried. See MORGAGNI *De Sed. et Caus.* Epist. xiii, Art. 4.

383. I might here, perhaps, give a separate section on the Carditis and Pericarditis, or the inflammations of the heart and pericardium; but they hardly require a particular consideration. An acute inflammation of the pericardium is almost always a part of the same pneumonic affection I have been treating of; and is not always distinguished by any different symptoms; or, if it be, does not require any different treatment. The same may be said of an acute inflammation of the heart itself; and, when it happens that the one or other is discovered by the symptoms of palpitation or syncope, no more will be implied than that the remedies of pneumonic inflammation should be employed with greater diligence.

From dissections, which shew the heart and pericardium affected with erosions, ulcerations, and abscesses, we discover, that these parts had been before affected with inflammation; and that, in cases where no symptoms of pneumonic inflammation had appeared: it may therefore be alleged, that those inflammations of the heart and pericardium should be considered as diseases independent of the pneumonic. This indeed is just: but the history of such cases proves, that those inflammations had been of a chronic kind, and hardly discovering themselves by any peculiar symptoms; or, if attended with symptoms marking an affection of the heart, these were, however, such as have been known frequently to arise from other causes than inflammation. There is, therefore, upon the whole, no room for our treating more particularly of the inflammation of the heart or pericardium.

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## CHAP. VIII.

### OF THE GASTRITIS, OR INFLAMMATION OF THE STOMACH.

384. AMONG the inflammations of the abdominal region, I have given a place in our nosology to the Peritonitis; comprehending under that title, not only the inflammations affecting the peritonæum lining the cavity of the abdomen, but also those affecting the extensions of this membrane in the omentum and mesentery. It is not, however, proposed to treat of them here, because it is very difficult to say by what symptoms they are always to be known; and farther, because, when known, they do not require any remedies beside those of inflammation in general. I proceed, therefore, to treat of those inflammations which, affecting viscera of peculiar functions, both give occasion to peculiar symptoms, and require some peculiarities in the method of cure: and I shall begin with the inflammation of the stomach.

385. The inflammation of the stomach is of two kinds, Phlegmonic, or Erythematic.* The first may be seated in what is called the nervous coat of the stomach, or in the peritonæum investing it. The second is always seated in the villous coat and cellular texture immediately subjacent.

386. The phlegmonic inflammation of the stomach, or what has been commonly treated of under the title of Gastritis, is known by an acute pain in some part of the region of the stomach, attended with pyrexia, with frequent vomiting, especially upon occasion of any thing being taken down into the stomach, and frequently with hick-up. The pulse is commonly small and hard; and there is a greater loss of strength in all the functions of the body, than in the case of almost any other inflammation.

387. This inflammation may be produced by various causes, as, by external contusion; by acrids of various kinds taken into the stomach; frequently by very cold drink taken into it while the body is very warm; and sometimes by over-distention, from the having taken in a large quantity of food of difficult digestion. All these may be considered as external causes; but the disease sometimes

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* This is a new term; but whoever considers what is said in 274, will, I expect, perceive the propriety, and even the necessity of it.

arises also from internal causes not so well understood. It may arise from inflammations of the neighbouring parts communicated to the stomach, and is then to be considered as a symptomatic affection only. It may arise also from various acrimonies generated within the body, either in the stomach itself, or in other parts, and poured into the cavity of the stomach. These are causes more directly applied to the stomach; but there are perhaps others originating elsewhere, and affecting the stomach only sympathetically. Such may be supposed to have acted in the case of putrid fevers and exanthematic pyrexiæ; in which, upon dissection, it has been discovered that the stomach had been affected with inflammation.

388. From the sensibility of the stomach, and its communication with the rest of the system, it will be obvious, that the inflammation of this organ, by whatever causes produced, may be attended with fatal consequences. In particular, by the great debility which such an inflammation suddenly produces, it may quickly prove fatal, without running the common course of inflammations.

When it lasts long enough to follow the ordinary course of other inflammations, it may terminate by resolution, gangrene, or suppuration. The schirrosities which are often discovered affecting the stomach, are seldom known to be the consequences of inflammation.

389. The tendency of this disease to admit of resolution, may be known by its having arisen from no violent cause; by the moderate state of the symptoms, and by a gradual remission of these, especially in consequence of remedies employed in the course of the first, or at farthest the second, week of the disease.

390. The tendency to suppuration may be known by the symptoms continuing, in a moderate degree, for more than one or two weeks; and likewise by a considerable remission of the pain, while a sense of weight and an anxiety still remain.

When an abscess has been formed, the frequency of the pulse is at first abated; but soon after, it is again increased, with frequent cold shiverings, and with marked exacerbations in the afternoon and evening, followed by night-sweatings, and other symptoms of hectic fever. These at length prove fatal, unless the abscess open into the cavity of the stomach, the pus be evacuated by vomiting, and the ulcer soon heal.

391. The tendency to gangrene may be suspected from the violence of the symptoms not yielding to the remedies employed during the first days of the disease: and that a gangrene has already begun, may be known from the sudden remission of the pain, while the frequency of the pulse con-

tinues, and at the same time becomes weaker, accompanied with other marks of an increasing debility in the whole system.

392. From the dissection of dead bodies it appears, that the stomach very often has been affected with inflammation, when the characteristic symptoms of it (386) had not appeared; and therefore it is very difficult to lay down any general rules for the cure of this disease.

393. It is only in the case of phlegmonic inflammation, as characterized in 386, that we can advise the cure or resolution to be attempted by large and repeated bleedings employed early in the disease: and we are not to be deterred from these by the smallness of the pulse; for, after bleeding, it commonly becomes fuller and softer. After bleeding, a blister ought to be applied to the region of the stomach; and the cure will be assisted by fomentations of the whole abdomen, as well as by frequent emollient and laxative glysters.

394. In this disease, the irritability of the stomach will not admit of any medicines being thrown into it; and, if any internal medicines can be supposed necessary, they must be exhibited in glysters. The giving of drink may be tried; but it ought to be of the very mildest kind, and in very small quantities at a time.

395. Opiates, in whatever manner exhibited, are very hurtful during the first days of the disease; but when its violence shall have abated, and when the violence of the pain and vomiting recur at intervals only, opiates given in glysters may be cautiously tried, and sometimes have been employed with advantage.

396. A tendency to suppuration, in this disease, is to be obviated by the means just now proposed. After a certain duration of the disease, it cannot be prevented by any means whatever; and, when actually begun, must be left to nature; the business of the physician being only to avoid all irritation.

397. A tendency to gangrene can be obviated in no other way than by the means suggested in 393, employed early in the disease; and, when it does actually supervene, admits of no remedy.

398. Erythematic inflammations of the stomach, are more frequent than those of the phlegmonic kind. It appears, at least, from dissections, that the stomach has often been affected with inflammation, when neither pain nor pyrexia had before given any notice of it; and such inflammation I apprehend to have been chiefly of the erythematic kind. This species of inflammation also, is especially to be expected from acrimony of any kind

thrown into the stomach; and would certainly occur more frequently from such a cause, were not the interior surface of this organ commonly defended by mucus exuding in large quantity from the numerous follicles placed immediately under the villous coat. Upon many occasions, however, the exudation of mucus is prevented, or the liquid poured out is of a less viscid kind, so as to be less fitted to defend the subjacent nerves; and it is in such cases that matters even of moderate acrimony, may produce an erythematic affection of the stomach.

399. From what has been said, it must appear that an erythematic inflammation of the stomach may frequently occur; but will not always discover itself, as it sometimes takes place without pyrexia, pain, or vomiting.

400. There are cases, however, in which it may be discovered. The affection of the stomach sometimes spreads into the œsophagus, and appears in the pharynx, as well as on the whole internal surface of the mouth. When, therefore, an erythematic inflammation affects the mouth and fauces, and when, at the same time, there shall be in the stomach an unusual sensibility to all acrids, with a frequent vomiting, there can be little doubt of the stomach being affected with the same inflammation that has appeared in the fauces. Even when no

inflammation appears in the fauces, yet if some degree of pain be felt in the stomach, if there be a want of appetite, an anxiety, frequent vomiting, an unusual sensibility with respect to acrids, some thirst, and frequency of pulse, there will then be room to suspect an erythematic inflammation of the stomach; and we have known such symptoms, after some time, discover their cause more clearly by the appearance of the inflammation in the fauces or mouth.

Erythematic inflammation is often disposed to spread from one place to another on the same surface; and, in doing so, to leave the place it had first occupied. Thus, such an inflammation has been known to spread successively along the whole course of the alimentary canal, occasioning in the intestines diarrhœa, and in the stomach vomitings; the diarrhœa ceasing when the vomitings come on, or the vomitings upon the coming on of the diarrhœa.

401. When an erythematic inflammation of the stomach shall be discovered, it is to be treated differently, according to the difference of its causes and symptoms.

When it is owing to acrid matters taken in by the mouth, and when these may be supposed still present in the stomach, they are to be washed out by throwing in a large quantity of warm and mild liquids, and by exciting vomiting. At the same time, if the nature of the acrimony and its proper corrector be known, this should be thrown in; or if a specific corrector be not known, some general demulcents should be employed.

402. These measures, however, are more suited to prevent the inflammation, than to cure it after it has taken place. When this last may be supposed to be the case, if it be attended with a sense of heat, with pain and pyrexia, according to the degree of these symptoms, the measures proposed in 393, are to be more or less employed.

403. When an erythematic inflammation of the stomach has arisen from internal causes, if pain and pyrexia accompany the disease, some bleeding, in persons not otherwise weakened, may be employed: but, as the affection often arises in putrid diseases, and in convalescents from fever, so, in these cases, bleeding is inadmissible; all that can be done being to avoid irritation, and to throw into the stomach what quantity of acids, and of acescent aliments, it shall be found to bear.

In some conditions of the body, in which this disease arises, the Peruvian bark and bitters may seem to be indicated; but an erythematic state of the stomach does not commonly allow of them.

# CHAP. IX.

## OF THE ENTERITIS, OR INFLAMMATION OF THE INTESTINES.

404. THE inflammation of the intestines, like that of the stomach, may be either phlegmonic, or erythematic: but, on the subject of the latter, I have nothing to add to what has been said in the last chapter; and shall here therefore treat of the phlegmonic inflammation only.

406.* This inflammation may be known to be present, by a fixed pain of the abdomen, attended with pyrexia, costiveness, and vomiting. Practical writers mention the pain in this case as felt in different parts of the abdomen, according to the different seat of the inflammation; and so, indeed, it sometimes happens; but very often the pain spreads over the whole belly, and is felt more especially about the navel.

407. The Enteritis and Gastritis arise from like causes; but the former, more readily than the

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* The articles were thus numbered in the last two editions of this work, published before the author's death. The errer is of no consequence; and is not corrected, for fear of making worse errors or confusion in the subsequent references.

latter, proceeds from cold applied to the lower extremities, or to the belly itself. The enteritis has likewise its own peculiar causes, as supervening upon the spasmodic colic, incarcerated hernia, and volvulus.

408. Inflammations of the intestines have the same terminations as those of the stomach; and, in both cases, the several tendencies are to be discovered by the same symptoms (389—391).

409. The cure of the enteritis is, in general, the same with that of the gastritis (393, *et seqq.*); but, in the enteritis, there is commonly more access to the introduction of liquids, of acid, accescent, and other cooling remedies, and even of laxatives. As, however, a vomiting so frequently attends this disease, care must be taken not to excite that vomiting by either the quantity or the quality of any thing thrown into the stomach.

The same observation, with respect to the use of opiates, is to be made here as in the case of gastritis.

410. Under the title of Enteritis, it has been usual with practical writers to treat of the remedies proper for the colic,* and its higher degree named *Ileus*: but, although it be true that the en-

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* See Art. 1435.

teritis and colic do frequently accompany each other, I still hold them to be distinct diseases, to be often occurring separately, and accordingly to require and admit of different remedies. I shall therefore delay speaking of the remedies proper for the colic, till I shall come to treat of this disease in its proper place.

411. What might be mentioned with respect to the suppuration or gangrene occurring in the enteritis, may be sufficiently understood from what has been said on the same subject with respect to the gastritis.

## CHAP. X.

### OF THE HEPATITIS, OR INFLAMATION OF THE LIVER.

412. THE inflammation of the liver seems to be of two kinds; the one acute, the other chronic.

413. The acute is attended with pungent pain; considerable pyrexia; a frequent, strong, and hard pulse; and high-coloured urine.

414. The chronic hepatitis very often does not exhibit any of these symptoms; and it is only dis-

covered to have happened, by our finding in the liver, upon dissection, large abscesses, which were presumed to be the effect of some degree of previous inflammation. As this chronic inflammation is seldom to be certainly known, and therefore does not lead to any determined practice, we omit treating of it here, and shall only treat of what relates to the acute species of the hepatitis.

415. The acute hepatitis may be known by a pain more or less acute in the right hypochondrium, increased by pressing upon the part. The pain is very often in such a part of the side as to make it appear like that of a pleurisy; and frequently, like that, too, is increased on respiration. The disease is, in some instances, also attended with a cough, which is commonly dry, but sometimes humid; and, when the pain thus resembles that of a pleurisy, the patient cannot lie easily except upon the side affected.

In every kind of acute hepatitis, the pain is often extended to the clavicle, and to the top of the shoulder. The disease is attended somtimes with hickup, and sometimes with vomiting. Many practical writers have mentioned the jaundice, or a yellow colour of the skin and eyes, as a very constant symptom of the hepatitis; but experience has shown, that it may often occur without any such symptom.

416. The remote causes of hepatitis are not al-

ways to be discerned, and many have been assigned on a very uncertain foundation. The following seem to be frequently evident. 1, External violence from contusions or falls, and especially those which have occasioned a fracture of the cranium. 2, Certain passions of the mind. 3, Violent summer heats. 4, Violent exercise. 5, Intermittent and remittent fevers. 6, Cold applied externally, or internally; and therefore, in many cases, the same causes which produce pneumonic inflammation, produce hepatitis, and whence also the two diseases are sometimes joined together. 7, Various solid concretions or collections of liquid matter, in the substance of the liver, produced by unknown causes. Lastly, The acute is often induced by a chronic inflammation of this viscus.

417. It has been supposed that the hepatitis may be an affection either of the extremities of the hepatic artery, or of those of the vena portarum; but of the last supposition there is neither evidence nor probability.

418. It seems probable, that the acute hepatitis is always an affection of the external membrane of the liver; and that the parenchymatic is of the chronic kind. The acute disease may be seated either on the convex or on the concave surface of the liver. In the former case, a more pungent pain and hickup may be produced, and the respira-

tion is more considerably affected. In the latter, there occurs less pain, and a vomiting is produced, commonly by some inflammation communicated to the stomach. The inflammation of the concave surface of the liver, may be readily communicated to the gall-bladder and biliary ducts; and this perhaps is the only case of idiopathic hepatitis attended with jaundice.

419. The hepatitis, like other inflammations, may end by resolution, suppuration, or gangrene; and the tendency to the one or the other of these events may be known from what has been delivered above.

420. The resolution of hepatitis is often the consequence of, or is attended with, evacuations of different kinds. A hemorrhagy, sometimes from the right nostril, and sometimes from the hemorrhoidal vessels, gives a solution of the disease. Sometimes a bilious diarrhœa contributes to the same event; and the resolution of the hepatitis, as of other inflammations, is attended with sweating, and with an evacuation of urine depositing a copious sediment. Can this disease be resolved by expectoration? it would seem to be sometimes cured by an erysipelas appearing in some external part.

421. When this disease has ended in suppuration, the pus collected may be discharged by

the biliary ducts; or, if the suppurated part does not anywhere adhere closely to the neighbouring parts, the pus may be discharged into the cavity of the abdomen; but if, during the first state of inflammation, the affected part of the liver shall have formed a close adhesion to some of the neighbouring parts, the discharge of the pus after suppuration may be various, according to the different seat of the abscess. When seated on the convex part of the liver, if the adhesion be to the peritonæum lining the common teguments, the pus may make its way through these, and be discharged outwardly: or, if the adhesion should have been to the diaphragm, the pus may penetrate through this, and into the cavity of the thorax, or of the lungs; and, through the latter may be discharged by coughing. When the abscess of the liver is seated on its concave part, then, in consequence of adhesions, the pus may be discharged into the stomach or the intestines; and into these last, either directly, or by the intervention of the biliary ducts.

422. The prognostics in this disease are established upon the general principles relating to inflammation, upon the particular circumstances of the liver, and upon the particular state of its inflammation.

The cure of this disease must proceed upon the general plan; by bleeding, more or less, according to the urgency of pain and pyrexia; by the application of blisters ; by fomentations of the external parts in the usual manner, and of the internal parts by frequent emollient glysters ; by frequently opening the belly by means of gentle laxatives ; and by diluent and refrigerant remedies.

423. Although, in many cases, the chronic hepatitis does not clearly discover itself ; yet, upon many occasions, it may perhaps be discovered, or at least suspected, from those causes which might affect the liver (416) having been applied ; from some fulness and some sense of weight in the right hypochondrium ; from some shooting pains at times felt in that region ; from some uneasiness or pain felt upon pressure in that part ; from some uneasiness from lying upon the left side ; and lastly, from some degree of pyrexia, combined with more or fewer of these symptoms.

When, from some of these circumstances, a chronic inflammation is to be suspected, it is to be treated by the same remedies as in the last paragraph, employed more or less, as the degree of the several symptoms shall more distinctly indicate.

424. When from either kind of inflammation a suppuration of the liver has been formed, and the abscess points outwardly, the part must be opened, the pus evacuated, and the ulcer healed, ac-

cording to the ordinary rules for cleansing and healing such abscesses and ulcers.

425. I might here consider the splenitis, or inflammation of the spleen; but it does not seem necessary, because the disease very seldom occurs. When it does, it may readily be known by the character given in our nosology; and its various termination, as well as the practice which it requires, may be understood from what has been already said with respect to the inflammations of the other abdominal viscera.

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## CHAP. XI.

### OF THE NEPHRITIS, OR THE INFLAMMATION OF THE KIDNEYS.

426. THIS disease, like other internal inflammations, is always attended with pyrexia; and is especially known from the region of the kidney being affected by pain, commonly obtuse, sometimes pungent. This pain is not increased by the motion of the trunk of the body, so much as a pain of the rheumatic kind affecting the same region. The pain of the nephritis may be often distinguished by its shooting along the course of the

ureter; and is frequently attended with a drawing up of the testicle, and with a numbness of the limb on the side affected; although, indeed, these symptoms most commonly accompany the inflammation arising from a calculus in the kidney or in the ureter. The nephritis is almost constantly attended with frequent vomiting, and often with costiveness and colic pains. Usually the state of the urine is changed; it is most commonly of a deep red colour, is voided frequently, and in small quantity at a time. In more violent cases, the urine is sometimes colourless.

427. The remote causes of this disease may be various, as external contusion; violent or long-continued riding; strains of the muscles of the back incumbent on the kidneys; various acrids in the course of the circulation conveyed to the kidneys; and perhaps some other internal causes not yet well known. The most frequent is that of calculous matter obstructing the tubuli uriniferi, or calculi formed in the pelvis of the kidneys, and either sticking there, or falling into the ureter.

428. The various event of this disease may be understood from what has been delivered on the subject of other inflammations.

429. Writers, in treating of the cure of nephritis, have commonly at the same time treated

of the cure of the Calculus Renalis: but, though this may often produce nephritis, it is to be considered as a distinct and separate disease; and what I have to offer as to the mode of treating it, must be reserved to its proper place. Here I shall treat only of the cure of the Nephrits Vera or Idiopathica.

430. The cure of this proceeds upon the general plan, by bleeding, external fomentation, frequent emollient glysters, antiphlogistic purgatives, and the free use of mild and demulcent liquids. The application of blisters is hardly admissible; or, at least, will require great care, to avoid any considerable absorption of the cantharides.

431. The Cystitis, or inflammation of the bladder, is seldom a primary disease; and therefore is not to be treated of here. The treatment of it, so far as necessary to be explained, may be readily understood from what has been already delivered.

432. Of the visceral inflammations, there remains to be considered the inflammation of the uterus: but I omit it here, because the consideration of it cannot be separated from that of the diseases of child-bearing women.

## CHAP. XII.

### OF THE RHEUMATISM.

433. Of this disease there are two species, the one named the Acute, the other the Chronic Rheumatism.

434. It is the Acute Rheumatism which especially belongs to this place, as from its causes, symptoms, and methods of cure, it will appear to be a species of phlegmasia or inflammation.

435. This disease is frequent in cold, and more uncommon in warm climates. It appears most frequently in autumn and spring, less frequently in winter when the cold is considerable and constant, and very seldom during the heat of summer.

436. The acute rheumatism generally arises from the application of cold to the body when any way unusually warm; or when one part of the body is exposed to cold whilst the other parts are kept warm; or, lastly, when the application of cold is long continued, as it is when wet or moist clothes are applied to any part of the body.

437. These causes may affect persons of all ages; but the rheumatism seldom appears in either very young or in elderly persons, and most commonly occurs from the age of puberty to that of thirty-five years.

438. These causes (436) may also affect persons of any constitution; but they most commonly affect those of a sanguine temperament.

439. This disease is particularly distinguished by pains affecting the joints, for the most part the joints alone, but sometimes affecting also the muscular parts. Very often the pains shoot along the course of the muscles, from one joint to another, and are always much increased by the action of the muscles belonging to the joint or joints affected.

440. The larger joints are most frequently affected; such as the hip-joint, and knees of the lower, and the shoulders and elbows of the upper, extremities. The ankles and wrists are also frequently affected; but the smaller joints, such as those of the toes or fingers, seldom suffer.

441. This disease, although sometimes confined to one part of the body only, yet very often affects many parts of it; and then it comes on with a cold stage, which is immediately succeeded by

the other symptoms of pyrexia, and particularly by a frequent, full, and hard pulse. Sometimes the pyrexia is formed before any pains are perceived; but more commonly pains are felt in particular parts, before any symptoms of pyrexia appear.

442. When no pyrexia is present, the pain is sometimes confined to one joint only; but, when any considerable pyrexia is present, although the pain may be chiefly in one joint, yet it seldom happens but that the pains affect several joints often at the very same time, but for the most part shifting their place, and, having abated in one joint, become more violent in another. They do not commonly remain long in the same joint, but frequently shift from one to another, and sometimes return to joints formerly affected; and in this manner the disease often continues for a long time.

443. The pyrexia attending this disease has an exacerbation every evening, and is most considerable during the night, when the pains also become more violent; and it is at the same time that the pains shift their place from one joint to another. The pains seem to be also increased during the night, by the body being covered more closely, and kept warmer.

444. A joint, after having been for sometime

affected with pain, commonly becomes affected also with some redness and swelling, which is painful to the touch. It seldom happens, that a swelling coming on does not alleviate the pain of the joint; but the swelling does not always take off the pain entirely, nor secure the joint against a return of it.

445. This disease is commonly attended with some sweating, which occurs early in the course of the disease; but it is seldom free or copious, and seldom either relieves the pains or proves critical.

446. In the course of this disease the urine is high-coloured, and in the beginning without sediment; but as the disease advances, and the pyrexia has more considerable remissions, the urine deposites a lateritious sediment. This, however, does not prove entirely critical; for the disease often continues long after such a sediment has appeared in the urine.

447. When blood is drawn in this disease, it always exhibits the appearance mentioned in 237.

448. The acute rheumatism, though it has so much of the nature of the other phlegmasiæ, differs from all those hitherto mentioned, in this, that it is not apt to terminate in suppuration. This al-

most never happens in rheumatism; but the disease sometimes produces effusions of a transparent gelatinous fluid into the sheaths of the tendons. If we may be allowed to suppose that such effusions are frequent, it must also happen, that the effused fluid is commonly reabsorbed; for it has seldom happened, and never indeed to my observation, that considerable or permanent tumours have been produced, or such as required to be opened, and to have the contained fluid evacuated. Such tumours, however, have occurred to others; and the opening made in them has produced ulcers difficult to heal. Vide Storck. Ann. Med. II.

449. With the circumstances mentioned from 439 to 448, the disease often continues for several weeks. It seldom, however, proves fatal; and it rarely happens that the pyrexia continues to be considerable for more than two or three weeks. While the pyrexia abates in its violence, if the pains of the joints continue, they are less violent, more limited in their place, being confined commonly to one or a few joints only, and are less ready to change their place.

450. When the pyrexia attending rheumatism has entirely ceased; when the swelling, and particularly the redness of the joints, are entirely gone; but when pains still continue to affect certain joints, which remain stiff, which feel uneasy

upon motion, or upon changes of weather, the disease is named the Chronic Rheumatism, as it very often continues for a long time. As the chronic is commonly the sequel of the acute rheumatism, I think it proper to treat of the former also in this place.

451. The limits between the acute and chronic rheumatism are not always exactly marked.

When the pains are still ready to shift their place; when they are especially severe in the night-time; when, at the same time, they are attended with some degree of pyrexia, and with some swelling, and especially with some redness of the joints; the disease is to be considered as still partaking the nature of the acute rheumatism.

But, when there is no degree of pyrexia remaining; when the pained joints are without redness; when they are cold and stiff; when they cannot easily be made to sweat; or when, while a free and warm sweat is brought out on the body, it is only clammy and cold on the pained joints; and when, especially, the pains of these joints are increased by cold, and relieved by heat applied to them; the case is to be considered as that of a purely chronic rheumatism.

452. The chronic rheumatism may affect different joints; but is especially ready to affect those

joints which are surrounded with many muscles, and those of which the muscles are employed in the most constant and vigorous exertions. Such is the case of the vertebræ of the loins, the affection of which is named Lumbago; or that of the hip-joint, when the disease is named Ischias, or Sciatica.

453. Violent strains and spasms occurring on sudden and somewhat violent exertions, bring on rheumatic affections, which at first partake of the acute, but very soon change into the nature of the chronic, rheumatism.

454. I have thus delivered the history of rheumatism; and suppose, that, from what has been said, the remote causes, the diagnosis and prognosis of the disease, may be understood. The distinction of the rheumatic pains from those resembling them, which occur in the syphilis and scurvy, will be obvious, either from the seat of those pains, or from the concomitant symptoms peculiar to these diseases. The distinction of rheumatism from gout will be more fully understood, from what is to be delivered in the following chapter.

455. With respect to the proximate cause of rheumatism, there have been various opinions. It has been imputed to a peculiar acrimony; of which,

however, in ordinary cases, I can find no evidence; and, from the consideration of the remote causes, the symptoms, and cure of the disease, I think the supposition very improbable.

The cause of an Ischias Nervosa assigned by Cotunnius, appears to me hypothetical, and is not supported by either the phenomena or method of cure. That, however, a disease of a rheumatic nature may be occasioned by an acrid matter applied to the nerves, is evident from the toothach, a rheumatic affection generally arising from a carious tooth.

That pains resembling those of rheumatism, may arise from deep-seated suppurations, we know from some cases depending on such a cause, and which, in their symptoms, resemble the lumbago or ischias. I believe, however, that, by a proper attention, these cases depending on suppuration, may be commonly distinguished from the genuine cases of lumbago and ischias; and from what is said in 448, I judge it to be at least improbable, that a genuine lumbago or ischias does ever end in suppuration.

456. The proximate cause of rheumatism has been by many supposed to be a lentor of the fluids obstructing the vessels of the part; but the same consideration as in 241, 1, 2, 3, 4, and 5, will apply equally here for rejecting the supposition of a lentor.

457. While I cannot, therefore, find either evidence or reason for supposing that the rheumatism depends upon any change in the state of the fluids, I must conclude, that the proximate cause of acute rheumatism is commonly the same with that of other inflammations not depending upon a direct stimulus.

458. In the case of rheumatism I suppose, that the most common remote cause of it, that is, cold applied, operates especially on the vessels of the joints, from these being less covered by a cellular texture than those of the intermediate parts of the limbs. I suppose further, that the application of cold produces a constriction of the extreme vessels on the surface, and at the same time an increase of tone or phlogistic diathesis in the course of them, from which arises an increased impetus of the blood, and, at the same time, a resistance to the free passage of it, and consequently inflammation and pain. Further, I suppose, that the resistance formed excites the vis medicatrix to a further increase of the impetus of the blood; and, to support this, a cold stage arises, a spasm is formed, and a pyrexia and phlogistic diathesis are produced in the whole system.

459. According to this explanation, the cause of acute rheumatism appears to be exactly analogous to that of the inflammations depending on

an increased afflux of blood to a part while it is exposed to the action of cold.

But there seems to be also, in the case of rheumatism, a peculiar affection of the fibres of the muscles. These fibres seem to be under some degree of rigidity, and therefore less easily admit of motion; and are pained upon the exertions of it.

It is also an affection of these fibres which gives an opportunity to the propagation of pains from one joint to another, along the course of the muscles; and which pains are more severely felt in the extremities of the muscles terminating in the joints, because beyond these the oscillations are not propagated.

This affection of the muscular fibres attending rheumatism, seems to explain why strains and spasms produce rheumatic affections; and, upon the whole, shews, that, with an inflammatory affection of the sanguiferous system, there is also in rheumatism a peculiar affection of the muscular fibres, which has a considerable share in producing the phenomena of the disease.

460. Having thus given my opinion of the proximate cause of rheumatism, I proceed to treat of the cure.

461. Whatever difficulty may occur with respect to the explanation given 458, and 459, this

remains certain, that in acute rheumatism, at least in all those cases which do not arise from direct stimuli, there is an inflammatory affection of the parts, and a phlogistic diathesis in the whole system; and upon these is founded the method of cure, which frequent experience has approved of.

462. The cure therefore requires, in the first place, an antiphlogistic regimen, and particularly a total abstinence from animal food, and from all fermented or spiritous liquors; substituting a vegetable or milk diet; and the plentiful use of bland diluent drinks.

463. Upon the same principle (450) at least with perhaps the same exception as above, bloodletting is the chief remedy of acute rheumatism. The blood ought to be drawn in large quantity, and the bleeding is to be repeated in proportion to the frequency, fullness, and hardness of the pulse, and to the violence of the pain. For the most part, large and repeated bleedings, during the first days of the disease, seem to be necessary, and accordingly have been very much employed: but to this some bounds are to be set; for very profuse bleedings occasion a slow recovery, and, if not absolutely effectual, are ready to produce a chronic rheumatism.

464. To avoid that debility of the system, which

general bleedings are ready to occasion, the urgent symptom of pain may be often relieved by topical bleedings; and, especially when any swelling and redness have come upon a joint, the pain of it may be very certainly relieved by such bleedings; but, as the continuance of the disease seems to depend more upon the phlogistic diathesis of the whole system, than upon the affection of particular parts, so topical bleedings will not always supply the place of the general bleedings proposed above.

465. To take off the phlogistic diathesis prevailing in this disease, purging may be useful, if procured by medicines which do not stimulate the whole system, such as the neutral salts, and which have in some measure a refrigerant power. Purging, however, is not so powerful as bleeding, in removing phlogistic diathesis; and, when the disease has become general and violent, frequent stools are inconvenient, and even hurtful, by the motion and pain which they occasion.

466. In acute rheumatism, applications to the pained parts are of little service. Fomentations, in the beginning of the disease, rather aggravate than relieve the pains. The rubefacients and camphire are more effectual in relieving the pains; but generally they only shift the pain from one part into another, and do little towards the cure of

the general affection. Blistering, applied to the pained part, may also be very effectual in removing the pain from it; but will be of little use, except where the pains are much confined to one part.

467. The several remedies mentioned from 451 to 455, moderate the violence of the disease, and sometimes remove it entirely; but they sometimes fail in this, and leave the cure imperfect. The attempting a cure by large and repeated bleedings, is attended with many inconveniencies, (see 140); and the most effectual and safe method of curing this disease is, after some general bleedings for taking off, or at least diminishing, the phlogistic diathesis, to employ sweating conducted by the rules laid down 168 and 169.

468. Opiates, except where they are directed to procure sweat, always prove hurtful in every stage of this disease.

469. The Peruvian bark has been supposed a remedy in some cases of this disease; but we have seldom found it useful, and, in some cases, hurtful. It appears to me to be fit in those cases only, in which the phlogistic diathesis is already much abated; and where, at the same time, the exacerbations of the disease are manifestly periodical, with considerable remissions interposed.

470. Calomel, and some other preparations of mercury, have been recommended in the acute rheumatism; but I believe they are useful only in cases of the chronic kind, or at least in cases approaching to the nature of these.

471. Having now treated fully of the cure of the acute rheumatism, I proceed to treat of the cure of the chronic, which is so frequently a sequel of the former.

472. The phenomena of the purely chronic rheumatism, mentioned in 439 and 440, lead me to conclude, that its proximate cause is an atony, both of the blood-vessels and of the muscular fibres of the part affected, together with a degree of rigidity and contraction in the latter, such as frequently attend them in a state of atony.

473. Upon this view of the proximate cause, the general indication of cure must be to restore the activity and vigour of the vital principle in the part; and the remedies for this disease, which experience has approved of, are chiefly such as are manifestly suited to the indication proposed.

474. These remedies are either external or internal.

The external are, the supporting the heat of the part, by keeping it constantly covered with flannel: the increasing the heat of the part by external heat, applied either in a dry or in a humid form: the diligent use of the flesh-brush, or other means of friction: the application of electricity in sparks or shocks: the application of cold water by affusion or immersion: the application of essential oils of the most warm and penetrating kind: the application of salt brine: and, lastly, the employment of exercise, either of the part itself, so far as it can easily bear it; or of the whole body, by riding, or other mode of gestation.

475. The internal remedies are, 1, Large doses of essential oil drawn from resinous substances; such as turpentine; 2, Substances containing such oils, as guaiac; 3, Volatile alkaline salts; 4, These, or other medicines directed to procure sweat, (169); and, lastly, calomel, or other preparation of mercury, in small doses, continued for some time.

476. These (463, 464) are the remedies successfully employed in the purely chronic rheumatism: and there are still others recommended; as bleeding, general and topical; burning; blistering; and issues: but these appear to me to be chiefly, perhaps only, useful when the disease still partakes of the nature of acute rheumatism.

## CHAP. XIII.

### OF THE TOOTHACH OR ODONTALGIA.

477. I HAVE formerly considered this disease as a species of rheumatism, to be treated upon the same principles as those delivered in the preceding chapter; but now, from more attentive consideration, I am led to consider the toothach as a distinct disease. Whilst the most of what has been delivered in the last chapter proceeds upon the supposition that the rheumatism depends upon a certain state of the blood-vessels, and of the motion of the blood in them, without this being produced by the irritation of any acrid matter applied; I judge, that in the toothach, though there are often the same circumstances in the state of the blood-vessels as in the cases of rheumatism, these circumstances in toothach always arise from the application of an acrid matter to the nerves of the teeth.

478. This disease is often no other than a pain felt in a particular tooth, without any inflammatory affection being at the same time communicated to the neighbouring parts. This, however, is rarely the case; and for the most part, together with the pain of the tooth, there is some degree of pain and of inflammatory affection communicated to

the neighbouring parts, sometimes to the whole of those on the same side of the head with the affected tooth.

479. This inflammatory affection seems to me to be always an affection of muscles, and of the membranous parts connected with these, without any tendency to suppuration; and such an affection, as is excited by cold in similar parts elsewhere. It is from these circumstances that I conclude the affection to be of the rheumatic kind.

480. It is possible that the muscles and membranes of the jaw may be affected by the same causes which produce the rheumatism in other parts; and it is also possible, that a rheumatic diathesis at first produced by irritation, may subsist in the muscles and membranes of the jaw, so that the inflammatory affection may be renewed by certain causes, without any new application of acrid matter: but I am persuaded that either of these occurrences are very rare, and I have never been able to ascertain any cases of toothach to be of these kinds. I consider it, therefore, as highly probable, that this rheumatic affection of the jaws, which we name toothach, is always dependent upon some immediate application of acrid matter to the nerves of the teeth.

481. It is, however, to be observed, that this

application of acrid matter does not always excite a pain in the tooth itself, or an inflammatory affection of the neighbouring parts; but that it very often operates by producing a diathesis only; so that cold applied to the neighbouring parts does excite both a pain in the tooth, and an inflammatory affection of the neighbouring parts which did not appear before.

There seem to be also certain states of the body, which operate upon the same diathesis, so as to produce toothach. Such seems to be the case with pregnant women, who are more liable to toothach than other women. There are probably also some cases of increased irritability which render persons more subject to toothach. Thus women are more liable to the disease than men, and particularly women liable to hysteric affections.

482. The acrid matter producing this disease seems to be generated first in the hard substances of the teeth; and as it often appears first upon the external surface of these, it might be suspected to arise from the application of external matters to the teeth: but as the production of this acrimony is often begun in the internal cavity of the teeth, where the operation of external matters cannot be suspected, and as even when it begins upon the external parts of the teeth, the operation of the cause is at first in a small portion of the teeth only, it is difficult to suppose that any matter

externally applied could act in such a partial manner; so it is presumed that the acrid matter occasioning the toothach is produced by some vice originating in the substance of the tooth itself. When it begins upon the external surface, it is on the enamel; but upon the internal surface, it must be in the bony part. From what causes it arises in either of these substances, I do not at all know; but I suspect that it often arises from some more general fault in the fluids of the body. The frequent use of mercury, especially when thrown much upon the mouth, and the state of the fluids in scurvy, seem both of them to give a disposition to a caries in the teeth; and it is possible that some other acrimonious states of the fluids may have the same effect.

483. A caries in some part of the teeth, whether arising upon their internal surface or upon their external, proceeding so far as to reach the nerves in the cavity of the teeth, is pretty manifestly the cause of toothach, and of the first attacks of it: but when the cavity of the teeth has been opened, so that the external air or other matters can reach that cavity, these are often the exciting causes of toothach, and serve to prove in general, that acrid matters applied to the nerves occasion the disease.

484. What is the nature of the matter produced

in the caries of the teeth, I do not understand, nor have I found any proper corrector of it; but I presume it to be of the putrid kind, as it often taints the breath with a fetid odour.

485. In the cure of this disease, a long experience has shewn, that the extraction of the carious tooth proves the most effectual, and very often the only effectual remedy of the disease. But as in some cases this extraction is not proper, and as in many cases it is obstinately avoided, other means of curing the disease, or at least of relieving the pain, have been sought for and much practised.

486. Among these remedies, those are likely to be the most effectual which entirely destroy the affected nerve, or at least so much of it as is exposed to the action of the acrid matter in the tooth. When an opening is made into the cavity of the tooth, the nerve of it may be destroyed most certainly by the actual cautery; and it may also possibly be done by the application of potential caustics, either of the alkaline or acid kind.

487. When these remedies cannot be rendered effectual, relief may often be obtained by diminishing the sensibility of the nerve affected, by the application of opium, or of the more acrid aromatic oils, directly to the nerve in the tooth. It appears also, that the sensibility of the affected nerve may

often be for some time diminished by the external application of opium to the extremities of those nerves in the skin, which are branches of the same fifth pair of nerves with those of the teeth.

488. When the disease consists entirely in a pain of the nerve of the tooth, without any considerable affection communicated to the neighbouring parts, the remedies already mentioned are those especially to be employed; but when the disease consists very much in an inflammatory affection of the muscles and membranes of the jaw, and when at the same time there is little or no access for the above-mentioned remedies to the affected nerve, other measures are to be employed for relieving the disease.

489. If the disease be attended with any general phlogistic diathesis of the system, or with any considerable degree of pyrexia, a general bleeding may be useful in relieving the disease; but these circumstances occur very rarely, and the disease is for the most part a purely topical affection; in which, as I observed before, a general bleeding is of very little service. As this disease, however, is a topical inflammation, it might be supposed that topical bleedings would be very useful, and sometimes they are so; but it is seldom that their effects are either considerable or permanent. The reasons of this I take to be, that the disease does

not consist in an affection of the blood-vessels alone, as in the ordinary cases of rheumatism; but in a peculiar affection of the fibres both of the muscles and of the vessels of the part induced by irritation. The inefficacy of topical bleedings is with me a proof of the disease being of the latter kind.

490. The remedies therefore necessary to give relief in this disease, are those which take off the spasm of the vessels, and especially of the muscles and membranes affected. Such are blistering, brought as near to the part affected as can conveniently be done; and such are also increased excretions excited in the neighbouring parts, as of the saliva and mucus of the mouth by the use of acrid masticatories. It is often sufficient to excite a strong sensation in the neighbouring parts; as by eau de luce, spirit of lavender, or Hungary water, snuffed up the nostrils; or by the vitriolic æther properly applied to the cheek. It is upon the same footing that I suppose brandy or other ardent spirit held in the mouth is often of service.

491. There are cases of toothach in which it does not appear that the disease arises from an acrid matter immediately applied to the nerve of a tooth; but from the external application of cold, or some other causes immediately applied to the muscles and membranes of the jaw; and which

therefore seem to require some remedies different from those above mentioned. But in all such cases, it is to be suspected, that the effects of cold, or of other such causes are owing to a diathesis produced by an acrid matter applied to the nerve of a tooth, and continuing in some measure to act there; and we have accordingly often found, that the action of those external causes was to be obviated only by the extraction of the tooth from which the diathesis had arisen.

# CHAP. XIV.

## OF THE GOUT.

492. THE Gout, not only as it occurs in different persons, but even as it occurs in the same person at different times, is a disease of such various appearance, that it is difficult to render the history of it complete and exact, or to give a character of it that will universally apply. However, I shall endeavour to describe the disease as it most commonly appears, and to mark the varieties of it as well as I can. From such a history, I expect that a general character may be given; and such I think is the following, as given in the last edition of our Nosology.

## GEN. XXIII.

### *Podagra.*

Morbus hæreditarius, oriens sine causa externa evidente, sed præeunte plerumque ventriculi affectione insolitâ; pyrexia; dolor ad articulum, et plerumque pedis pollici, certe pedum et manuum juncturis, potissimum infestus; per intervalla revertens, et sæpe cum ventriculi et aliarum internarum partium affectionibus alternans.

493. The gout is generally a hereditary disease: but some persons, without hereditary disposition, seem to acquire it; and, in some, a hereditary disposition may be counteracted by various causes. These circumstances may seem to give exceptions to our general position; but the facts directly supporting it are very numerous.

494. This disease attacks especially the male sex; but it sometimes, though more rarely, attacks also the female. The females liable to it are those of the more robust and full habits; and it very often happens to such long before the menstrual evacuation has ceased. I have found it occurring in several females, whose menstrual evacuations were more abundant than usual.

495. This disease seldom attacks eunuchs; and,

when it does, they seem to be those who happen to be of a robust habit, to lead an indolent life, and to live very full.

496. The gout attacks especially men of robust and large bodies, men of large heads, of full and corpulent habits, and men whose skins are covered with a thicker rete mucosum, which gives a coarser surface.

497. If, with the ancients, we might ascertain, by certain terms, the temperaments of men, I would say, that the gout attacks especially men of a *cholerico-sanguine* temperament, and that it very seldom attacks the purely sanguine or melancholic. It is, however, very difficult to treat this matter with due precision.

498. The gout seldom attacks persons employed in constant bodily labour, or persons who live much upon vegetable aliment. It is also said to be less frequent among those people who make no use of wine or other fermented liquors.

499. The gout does not commonly attack men, till after the age of five and thirty; and generally not till a still later period. There are indeed instances of the gout occurring more early; but these are few in comparison of the numbers which agree with what we have given as the general rule.

When the disease does appear early in life, it seems to be in those in whom the hereditary disposition is very strong, and to whom the remote causes, to be hereafter mentioned, have been applied in a considerable degree.

500. As the gout is a hereditary disease, and affects especially men of a particular habit, its remote causes may be considered as predisponent and occasional.

501. The predisponent cause, so far as expressed by external appearances, or by the general temperament, we have already marked; and physicians have been very confident in assigning the occasional causes; but, in a disease depending so much upon a predisposition, the assigning occasional causes must be uncertain; as, in the predisposed, the occasional causes may not always appear, and in persons not predisposed, they may appear without effect. This uncertainty must particularly affect the case of the gout; but I shall offer what appears to me most probable on the subject.

502. The occasional causes of the gout seem to be of two kinds. First, those which induce a plethoric state of the body. Secondly, those which, in plethoric habits, induce a state of debility.

503. Of the first kind are a sedentary and indolent manner of life, a full diet of animal food, and the large use of wine or of other fermented liquors. These circumstances commonly precede the disease; and if there should be any doubt of their power of producing it, the fact, however, will be rendered sufficiently probable by what has been observed in 498.

504. Of the second kind of occasional causes which induce debility are, excess in venery; intemperance in the use of intoxicating liquors; indigestion, produced either by the quantity or quality of aliments; much application to study or business; night-watching; excessive evacuations; the ceasing of usual labour; the sudden change from a very full to a very spare diet; the large use of acids and acescents; and, lastly, cold applied to the lower extremities.

505. The first (503) seem to act by increasing the predisposition. The last (504) are commonly the exciting causes, both of the first attacks, and of the repetitions of the disease.

506. It is an inflammatory affection of some of the joints which especially constitutes what we call a paroxysm of the gout. This sometimes comes on suddenly without any warning, but is generally preceded by several symptoms; such as the ceasing

of a sweating which the feet had been commonly affected with before; an unusual coldness of the feet and legs; a frequent numbness, alternating with a sense of prickling along the whole of the lower extremities; frequent cramps of the muscles of the legs; and an unusual turgescence of the veins.

507. While these symptoms take place in the lower extremities, the whole body is affected with some degree of torpor and languor, and the functions of the stomach in particular are more or less disturbed. The appetite is diminished; and flatulency, or other symptoms of indigestion, are felt. These symptoms, and those of 506, take place for several days, sometimes for a week or two, before a paroxysm comes on: but commonly, upon the day immediately preceding it, the appetite becomes greater than usual.

508. The circumstances of paroxysms are the following.—They come on most commonly in the spring, and sooner or later, according as the vernal heat succeeds sooner or later to the winter's cold; and perhaps sooner or later also according as the body may happen to be more or less exposed to the vicissitudes of heat and cold.

509. The attacks are sometimes felt first in the evening, but more commonly about two or three

o'clock of the morning. The paroxysm begins with a pain affecting one foot, most commonly in the ball or first joint of the great toe, but sometimes in other parts of the foot. With the coming on of this pain, there is commonly more or less of a cold shivering, which, as the pain increases, gradually ceases, and is succeeded by a hot stage of pyrexia, which continues for the same time with the pain itself. From the first attack, the pain becomes by degrees more violent, and continues in this state with great restlessness of the whole body, till next midnight, after which it gradually remits; and after it has continued for twenty-four hours from the commencement of the first attack, it commonly ceases very entirely, and, with the coming on of a gentle sweat, allows the patient to fall asleep. The patient, upon coming out of this sleep in the morning, finds the pained part affected with some redness and swelling, which, after having continued some days, gradually abate

510. When a paroxysm has thus come on, a
though the violent pain after twenty-four hours l
considerably abated, the patient is not entirely r
lieved from it. For some days he has every ev
ing a return of more considerable pain and
rexia, and which continue with more or less
lence till morning. After continuing in this n
ner for several days, the disease sometimes
entirely off, not to return till after a long inte

511. When the disease, after having thus remained for some time in a joint, ceases very entirely, it generally leaves the person in very perfect health, enjoying greater ease and alacrity in the functions of both body and mind, than he had for a long time before experienced.

512. At the beginning of the disease, the returns of it are sometimes only once in three or four years: but, after some time, the intervals become shorter, and the attacks become annual; afterwards they come twice each year, and at length recur several times during the whole course of autumn, winter, and spring; and as it happens that, when the fits are frequent, the paroxysms become also longer, so, in the advanced state of the disease, the patient is hardly ever tolerably free from it, except perhaps for two or three months in summer.

513. The progress of the disease is also marked by the parts which it affects. At first, it commonly affects one foot only; afterwards every paroxysm affects both feet, the one after the other; and, as the disease continues to recur, it not only affects both feet at once, but after having ceased in the foot which was secondly attacked, returns again into the foot first affected, and perhaps a second time also into the other. Its changes of place are not only from one foot to the other, but also

from the feet into other joints, especially those of the upper and lower extremities; so that there is hardly a joint of the body that is not, on one occasion or other, affected: it sometimes affects two different joints at the same time; but more commonly it is severe in a single joint only, and passes successively from one joint to another; so that the patient's affliction is often protracted for a long time.

514. When the disease has often returned, and the paroxysms have become very frequent, the pains are commonly less violent than they were at first; but the patient is more affected with sickness, and the other symptoms of the atonic gout, which shall be hereafter mentioned.

515. After the first paroxysms of the disease, the joints which have been affected are entirely restored to their former suppleness and strength: but after the disease has recurred very often, the joints affected do neither so suddenly nor so entirely recover their former state, but continue weak and stiff; and these effects at length proceed to such a degree, that the joints lose their motion altogether.

516. In many persons, but not in all, after the disease has frequently recurred, concretions of a chalky nature are formed upon the outside of the

oints, and for the most part immediately under the skin. The matter seems to be deposited at first in a fluid form, but afterwards becomes dry and firm. In their dry state, these concretions are a friable earthy substance, very entirely soluble in acids. After they have been formed, they contribute, with other circumstances, to destroy the motion of the joint.

517. In most persons who have laboured under the gout for many years, a nephritic affection comes on, and discovers itself by all the symptoms which usually attend calculous concretions in the kidneys, and which we shall have occasion to describe in another place. All that is necessary to be observed here is, that the nephritic affection alternates with paroxysms of the gout, and that the two affections, the nephritic and the gouty, are hardly ever present at the same time. This also may be observed, that children of gouty or nephritic parents, commonly inherit one or other of these diseases; but whichever may have been the principal disease of the parent, some of the children have the one, and some the other. In some of them, the nephritic affection occurs alone, without any gout supervening; and this happens to be frequently the case of the female offspring of gouty parents.

518. In the whole of the history already given,

I have described the most common form of the disease; and which therefore, however diversified in the manner I have said, may still be called the regular state of the gout. Upon occasion, however, the disease assumes different appearances; but, as I suppose the disease to depend always upon a certain diathesis or disposition of the system; so every appearance which we can perceive to depend upon that same disposition, I still consider as a symptom and case of the gout. The principal circumstance in what we term the *Regular Gout*, is the inflammatory affection of the joints; and, whatever symptoms we can perceive to be connected with, or to depend upon, the disposition which produces that inflammatory affection, but without its taking place, or being present at the same time, we name the *Irregular Gout*.

519. Of such irregular gout there are three di ferent states, which I name the *atonic*, the *retroc dent*, and the *misplaced*, gout.

520. The atonic state is when the gouty diat sis prevails in the system, but from certain ca does not produce the inflammatory affection o joints. In this case, the morbid symptoms v appear are chiefly affections of the stomach; as loss of appetite, indigestion, and its vario cumstances of sickness, nausea, vomiting lency, acid eructations, and pains in the re

the stomach. These symptoms are frequently accompanied with pains and cramps in several parts of the trunk, and the upper extremities of the body, which are relieved by the discharge of wind from the stomach. Together with these affections of the stomach, there commonly occurs a costiveness, but sometimes a looseness, with colic pains. These affections of the alimentary canal are often attended with all the symptoms of hypochondriasis; as dejection of mind, a constant and anxious attention to the slightest feelings, an imaginary aggravation of these, and an apprehension of danger from them.

In the same atonic gout, the viscera of the thorax also are sometimes affected, and palpitations, faintings, and asthma, occur.

In the head also occur, headachs, giddiness, apoplectic and paralytic affections.

521. When the several symptoms now mentioned occur in habits having the marks of a gouty disposition, this may be suspected to have laid the foundation of them; and especially when either, in such habits, a manifest tendency to the inflammatory affection has formerly appeared; or when the symptoms mentioned are intermixed with, and are relieved by, some degree of the inflammatory gout. In such cases there can be no doubt of considering the whole as a state of the gout.

522. Another state of the disease I name the *retrocedent* gout. This occurs when an inflammatory state of the joints has, in the usual manner, come on, but which, without arising to the ordinary degree of pain and inflammation, or, at least, without these continuing for the usual time, and receding gradually in the usual manner, they suddenly and entirely cease, while some internal part becomes affected. The internal part most commonly affected is the stomach, which is then affected with anxiety, sickness, vomiting, or violent pain; but sometimes the internal part is the heart, which gives occasion to a syncope; sometimes it is the lungs, which are affected with asthma; and sometimes it is the head, giving occasion to apoplexy or palsy. In all these cases, there can be no doubt of the symptoms being all a part of the same disease, however different the affection may seem to be in the parts which it attacks.

523. The third state of irregular gout, which we name the *misplaced*, is when the gouty diathesis, instead of producing the inflammatory affection of the joints, produces an inflammatory affection of some internal part, and which appears from the same symptoms that attend the inflammation of those parts arising from other causes.

Whether the gouty diathesis does ever produce such inflammation of the internal parts, without having first produced it in the joints, or if the inflammation of the internal parts be always a translation from the joints previously affected, I dare not determine; but, even supposing the latter to be always the case, I think the difference of the affection of the internal part must still distinguish the Misplaced from what I have named the Retrocedent Gout.

524. What internal parts may be affected by the misplaced gout I cannot precisely say, because I have never met with any cases of the misplaced gout in my practice; and I find no cases of it distinctly marked by practical writers, except that of pneumonic inflammation.

525. There are two cases of a translated gout; the one of which is an affection of the neck of the bladder, producing pain, strangury, and a catarrhus vesicæ: the other is an affection of the rectum, sometimes by pain alone in that part, and sometimes by hæmorrhoidal swellings there. In gouty persons, I have known such affections alternate with inflammatory affections of the joints: but whether to refer these affections to the retrocedent or to the misplaced gout, I will not presume to determine.

526. From the history which I have now delivered of the gout, I think it may be discerned under all its various appearances. It is, however, commonly supposed, that there are cases in which it may be difficult to distinguish gout from rheumatism, and it is possible there may be such cases; but, for the most part, the two diseases may be distinguished with great certainty by observing the predisposition, the antecedents, the parts affected, the recurrences of the disease, and its connection with the other parts of the system; which circumstances, for the most part, appear very differently in the two diseases.

527. With respect to the gout, our next business is to investigate its proximate cause; which must be a difficult task, and I attempt it with some diffidence.

528. Upon this subject, the opinion which has generally prevailed is, that the gout depends upon a certain morbific matter, always present in the body; and that this matter, by certain causes, thrown upon the joints or other parts, produces the several phenomena of the disease.

529. This doctrine, however ancient and general, appears to me very doubtful; for,

First, There is no direct evidence of any morbific matter being present in persons disposed to the gout. There are no experiments or observations which shew that the blood, or other humours of gouty persons, are in any respect different from those of other persons. Previous to attacks of the gout, there appear no marks of any morbid state of the fluids; for the disease generally attacks those persons who have enjoyed the most perfect health, and appear to be in that state when the disease comes on. At a certain period of the disease, a peculiar matter indeed appears in gouty persons, (516); but this, which does not appear in every instance,* and which appears only after the disease has subsisted for a long time, seems manifestly to be the effect, not the cause, of the disease. Further, though there be certain acrids which taken into the body, seem to excite the gout, (504), it is probable that these acrids operate otherwise in exciting the disease, than by affording the material cause of it. In general, therefore, there is no proof of any morbific matter being the cause of the gout.

Secondly, The suppositions concerning the particular nature of the matter producing the gout, have been so various and so contradictory to each other, as to allow us to conclude, that there is truly no proof of the existence of any of them. With respect to many of these suppositions, they are so inconsistent with chemical philosophy, and with the laws of the animal economy, that they must be entirely rejected.

Thirdly, The supposition of a morbific matter being the cause of the gout, is not consistent with the phenomena of the disease, particularly with its frequent and sudden translations from one part to another.

Fourthly, The supposition is farther rendered improbable by this, that, if a morbific matter did exist, its operation should be similar in the several parts which it attacks; whereas it seems to be very different, being stimulant and exciting inflammation in the joints, but sedative and destroying the tone in the stomach: which, upon the supposition of particular matter acting in both cases, is not to be explained by any difference in the part affected.

Fifthly, Some facts, alleged in proof of a morbific matter, are not sufficiently confirmed, such as those which prove the disease to be contagious. There is, however, no proper evidence of this, the facts given being not only few, but exceptionable; and the negative observations are innumerable.

Sixthly, Some arguments brought in favour of a morbific matter, are founded upon a mistaken explanation. The disease has been supposed to depend upon a morbific matter, because it is hereditary. But the inference is not just: for most hereditary diseases do not depend upon any morbific matter, but upon a particular conformation of the structure of the body, transmitted from the parent to the offspring; and this last appears to be particularly the case in the gout. It may be also observed, that hereditary diseases, depending upon a morbific matter, always appear much more early in life than the gout commonly does.

Seventhly, The supposition of a morbific matter being the cause of the gout, has been hitherto useless, as it has not suggested any successful method of cure. Particular suppositions have often corrupted the practice, and have frequently led from those views which might be useful, and from that practice which experience had approved. Further, though the supposition of a morbific matter has been generally received, it has been as generally neglected in practice. When the gout has affected the stomach, nobody thinks of correcting the matter supposed to be present there, but merely of restoring the tone of the moving fibres.

Eighthly, The supposition of a morbific matter is quite superfluous; for it explains nothing, without supposing that matter to produce a change in the state of the moving powers; and a change in the state of the moving powers, produced by other causes, explains every circumstance, without the supposition of a morbific matter: and, to this purpose, it may be observed, that many of the causes (504) exciting the gout, do not operate upon the state of the fluids, but directly and solely upon that of the moving powers.

Lastly, The supposition of a morbific matter is also superfluous; because, without any such supposition, I think the disease can be explained in a manner more consistent with its phenomena, with the laws of the animal economy, and with the method of cure which experience has approved.

I now proceed to give this explanation; but before entering upon it, I must premise some general observations.

530. The first observation is, that the gout is a disease of the whole system, or depends upon a certain general conformation and state of the body; which manifestly appears from the facts mentioned from 494 to 497. But the general state of the system depends chiefly upon the state of its primary moving powers; and therefore the gout may be supposed to be chiefly an affection of these.

531. My second observation is, that the gout is manifestly an affection of the nervous system; in which the primary moving powers of the whole system are lodged. The occasional or exciting causes (504) are almost all such as act directly upon the nerves and nervous system; and the greater part of the symptoms of the atonic or retrocedent gout, are manifestly affections of the same system, (520 and 522). This leads us to seek for an explanation of the whole of the disease in the laws of the nervous system, and particularly in the

changes which may happen in the balance of its several parts.

532. My third observation is, that the stomach, which has so universal a consent with the rest of the system, is the internal part that is the most frequently, and often very considerably, affected by the gout. The paroxysms of the disease are commonly preceded by an affection of the stomach (507); many of the exciting causes (504) act first upon the stomach; and the symptoms of the atonic and retrocedent gout (520, and 522), are most commonly and chiefly affections of the same organ. This observation leads us to remark, that there is a balance subsisting between the state of the internal and that of the external parts; and, in particular, that the state of the stomach is connected with that of the external parts (44), so that the state of tone in the one may be communicated to the other.

533. These observations being premised, I shall now offer the following pathology of the gout.

In some persons there is a certain vigorous and plethoric state of the system (496), which, at a certain period of life is liable to a loss of tone in the extremities (499, 506). This is in some measure communicated to the whole system, but appears more especially in the functions of the stomach (507). When this loss of tone occurs while the energy of the brain still retains its vigour, the vis medicatrix naturæ is excited to restore the tone of the parts; and accomplishes it by exciting an inflammatory affection in some part of the extremities. When this has subsisted for some days, the tone of the extremities and of the whole system, is restored, and the patient returns to his ordinary state of health (511).

534. This is the course of things, in the ordinary form of the disease, which we name the *regular gout*; but there are circumstances of the body, in which this course is interrupted or varied. Thus, when the atony (506, 507), has taken place, if the re-action (509) do not succeed, the atony continues in the stomach, or perhaps in other internal parts, and produces that state which we have, for reasons now obvious, named the *atonic gout*.

535. A second case of variation in the course of the gout, is, when, to the atony, the re-action and inflammation have to a certain degree succeeded, but, from causes either internal or external, the tone of the extremities, and perhaps of the whole system, is weakened; so that the inflammatory state, before it had either proceeded to the degree, or continued for the time, requisite for restoring the tone of the system, suddenly and entirely ceases. Hence the stomach, and other in-

ternal parts, relapse into the state of atony; and perhaps have this increased by the atony communicated from the extremities: all which appears in what we have termed the *retrocedent gout.*

536. A third case of variation from the ordinary course of the gout, is, when, to the atony usually preceding, an inflammatory re-action fully succeeds; but has its usual determination to the joints by some circumstances prevented; and is therefore directed to an internal part, where it produces an inflammatory affection, and that state of things which we have named the *misplaced gout.*

537. We have thus offered an explanation of the circumstances of the system in the several states of the gout; and this explanation we suppose to be consistent with the phenomena of the disease, and with the laws of the animal economy. There are indeed, with respect to the theory of the disease, several questions which might be put; to which we have not given any answer. But, though perhaps we could give an answer to many of these questions, it does not here appear necessary; as at present we intend only to establish such general facts with regard to this disease, as may lay a foundation for the cure of it, so far as experience has enabled us to prosecute it. Proceeding, therefore, upon the several parts of the pathology given, as so many matters of fact, I shall now consider what

may be attempted towards the cure of the disease.

538. In entering upon this, I must observe, in the first place, that a cure has been commonly thought impossible; and we acknowledge it to be very probable, that the gout, as a disease of the whole habit, and very often depending upon original conformation, cannot be cured by medicines, the effects of which are always very transitory, and seldom extend to the producing any considerable change of the whole habit.

539. It would perhaps have been happy for gouty persons, if this opinion had been implicitly received by them: as it would have prevented their having been so often the dupes of self-interested pretenders, who have either amused them with inert medicines, or have rashly employed those of the most pernicious tendency. I am much disposed to believe the impossibility of a cure of the gout by medicines; and more certainly still incline to think, that whatever may be the possible power of medicines, yet no medicine for curing the gout has hitherto been found. Although almost every age has presented a new remedy, yet all hitherto offered have very soon been either neglected as useless, or condemned as pernicious.

540. Though unwilling to admit the power of

medicines, yet I contend, that a great deal can be done towards the cure of the gout by a regimen: and from what has been observed (498), I am firmly persuaded, that any man, who, early in life, will enter upon the constant practice of bodily labour, and of abstinence from animal food, will be preserved entirely from the disease.

Whether there be any other means of radically curing the gout, I am not ready to determine. There are histories of cases of the gout, in which it is said, that by great emotions of mind, by wounds, and by other accidents, the symptoms have been suddenly relieved, and never again returned; but how far these accidental cures might be imitated by art, or would succeed in other cases, is at least extremely uncertain.

541. The practices proper and necessary in the treatment of the gout, are to be considered under two heads: *first*, as they are to be employed in the intervals of paroxysms; or, *secondly*, as during the time of these.

542. In the intervals of paroxysms, the indications are, to prevent the return of paroxysms, or at least to render them less frequent, and more moderate. During the time of paroxysms, the indications are, to moderate their violence, and shorten the duration of them as much as can be done with safety to the patient.

543. It has been already observed, that the gout may be entirely prevented by constant bodily exercise, and by a low diet; and I am of opinion, that this prevention may take place even in persons who have a hereditary disposition to the disease. I must add here, that, even when the disposition has discovered itself by several paroxysms of inflammatory gout, I am persuaded that labour and abstinence will absolutely prevent any returns of it for the rest of life. These, therefore, are the means of answering the first indication to be pursued in the intervals of paroxysms; and I must here offer some remarks upon the proper use of these remedies.

544. Exercise in persons disposed to the gout is directed to two purposes: one of these is the strengthening of the tone of the extreme vessels; and the other, the guarding against a plethoric state. For the former, if exercise be employed early in life, and before intemperance has weakened the body, a very moderate degree of it will answer the purpose; and for the latter, if abstinence be at the same time observed, little exercise will be necessary.

545. With respect to exercise, this in general is to be observed, that it should never be violent; for, if violent, it cannot be long continued, and must always endanger the bringing on an atony

in proportion to the violence of the preceding exercise.

546. It is also to be observed, that the exercise of gestation, though considerable and constant, if it be entirely without bodily exercise, will not answer the purpose in preventing the gout. For this end, therefore, the exercise must be in some measure that of the body; and must be moderate, but at the same time constant, and continued through life.

547. In every case and circumstance of the gout in which the patient retains the use of his limbs, bodily exercise, in the intervals of paroxysms, will always be useful; and, in the beginning of the disease, when the disposition to it is not yet strong, exercise may prevent a paroxysm which otherwise might have come on. In more advanced states of the disease, however, when there is some disposition to a paroxysm, much walking will bring it on; either as it weakens the tone of the lower extremities, or as it excites an inflammatory disposition in them; and it is probable, that in the same manner strains or contusions often bring on a paroxysm of the gout.

548. Abstinence, the other part of our regimen (540) for preventing the gout, is of more difficult application. If an abstinence from animal food be

entered upon early in life, while the vigour of the system is yet entire, we have no doubt of its being both safe and effectual; but, if the motive for this diet shall not have occurred till the constitution shall have been broken by intemperance, or by the decline of life, a low diet may then endanger the bringing on an atonic state.

549. Further, if a low diet be entered upon only in the decline of life, and be at the same time a very great change in the former manner of living, the withdrawing of an accustomed stimulus of the system may readily throw this into an atonic state.

550. The safety of an abstemious course may be greater or less according to the management of it. It is animal food which especially disposes to the plethoric and inflammatory state, and that food is to be therefore especially avoided; but, on the other hand, it is vegetable aliment of the lowest quality that is in danger of weakening the system too much, by not affording sufficient nourishment; and more particularly, of weakening the tone of the stomach by its acescency. It is therefore a diet of a middle nature that is to be chosen; and milk is precisely of this kind, as containing both animal and vegetable matter.

As approaching to the nature of milk, and as being a vegetable matter containing the greatest portion of nourishment, the farinaceous seeds are next to be chosen, and are the food most proper to be joined with milk.

551. With respect to drink, fermented liquors are useful only when they are joined with animal food, and that by their acescency; and their stimulus is only necessary from custom. When, therefore, animal food is to be avoided, fermented liquors are unnecessary; and, by increasing the acescency of vegetables, these liquors may be hurtful. The stimulus of fermented or spiritous liquors, is not necessary to the young and vigorous; and, when much employed, impairs the tone of the system. These liquors, therefore, are to be avoided, except so far as custom and the declining state of the system may have rendered them necessary. For preventing or moderating the regular gout, water is the only proper drink.

552. With respect to an abstemious course, it has been supposed, that an abstinence from animal food and fermented liquors, or the living upon milk and farinacea alone for the space of one year, might be sufficient for a radical cure of the gout: and it is possible that, at a certain period of life, in certain circumstances of the constitution, such a measure might answer the purpose. But this is very doubtful; and it is more probable that

the abstinence must, in a great measure, be continued, and the milk-diet be persisted in, for the rest of life. It is well known, that several persons who had entered on an abstemious course, and had been thereby delivered from the gout, have, however, upon returning to their former manner of full living, had the disease return upon them with as much violence as before, or in a more irregular and more dangerous form.

*553.* It has been alleged, that, for preventing the return of the gout, blood-letting, or scarifications of the feet, frequently repeated, and at stated times, may be practised with advantage; but of this I have had no experience.

*554.* Exercise and abstinence are the means of avoiding the plethoric state which gives the disposition to the gout; and are therefore the means proposed for preventing paroxysms, or at least for rendering them less frequent and more moderate. But many circumstances prevent the steadiness necessary in pursuing these measures: and therefore, in such cases, unless great care be taken to avoid the exciting causes, the disease may frequently return; and, in many cases, the preventing of p roxysms is chiefly to be obtained by avoiding the exciting causes enumerated in 504. The condi necessary for avoiding them, will be sufficie obvious to persons acquainted with the doctri of the Hygieine, which, I suppose to have been delivered in another place.

555. A due attention in avoiding those several causes (503, 504) will certainly prevent fits of the gout; and the taking care that the exciting causes be never applied in a great degree, will certainly render fits more moderate when they do come on. But, upon the whole, it will appear, that a strict attention to the whole conduct of life, is in this matter necessary; and therefore, when the predisposition has taken place, it will be extremely difficult to avoid the disease.

556. I am indeed firmly persuaded, that, by obviating the predisposition, and by avoiding the exciting causes, the gout may be entirely prevented: but as the measures necessary for this purpose will, in most cases, be pursued with difficulty, and even with reluctance, men have been very desirous to find a medicine which might answer the purpose without any restraint on their manner of living. To gratify this desire, physicians have proposed, and, to take advantage of it, empirics have feigned, many remedies, as we have already observed. Of what nature several of these remedies have been, I cannot certainly say; but of those which are unknown, we conclude, from their having been only of temporary fame, and from their having soon fallen into neglect, that they have

been either inert or pernicious, and therefore I make no inquiry after them; and shall now remark only upon one or two known remedies for the gout which have been lately in vogue.

557. One of these is what has been named in England the Portland powder. This is not a new medicine, but is mentioned by GALEN, and, with some little variation in its composition, has been mentioned by the writers of almost every age since that time. It appears to have been at times in fashion, and to have again fallen into neglect; and I think that this last has been owing to its having been found to be, in many instances, pernicious. In every instance which I have known of its exhibition for the length of time prescribed, the persons who had taken it were indeed afterwards free from any inflammatory affection of the joints; but they were affected with many symptoms of the atonic gout; and all, soon after finishing their course of the medicine, have been attacked with apoplexy, asthma, or dropsy, which proved fatal.

558. Another remedy which has had the appearance of preventing the gout is, an alkali in various forms, such as the fixed alkali, both mild and caustic, lime-water, soap, and absorbent earths. Since it became common to exhibit these medicines in nephritic and calculous cases, it has often happened that they were given to those who were

at the same time subject to the gout; and it has been observed, that under the use of these medicines, gouty persons have been longer free from the fits of their disease. That, however, the use of these medicines has entirely prevented the returns of gout, I do not know; because I never pushed the use of those medicines for a long time, being apprehensive that the long-continued use of them might produce a hurtful change in the state of the fluids.

559. With respect to preventing the gout, I have only one other remark to offer. As the preventing the gout depends very much on supporting the tone of the stomach, and avoiding indigestion; so costiveness, by occasioning this, is very hurtful to gouty persons. It is therefore necessary for such persons to prevent or remove costiveness, and by a laxative medicine, when needful; but it is at the same time proper, that the medicine employed should be such as may keep the belly regular, without much purging. Aloetics, rhubarb, magnesia alba, or flowers of sulphur, may be employed, as the one or the other may happen to be best suited to particular persons.

560. These are the several measures (from 542 to 559) to be pursued in the intervals of the pa-

roxysms; and we are next to mention the measures proper during the time of them.

561. As during the times of paroxysms the body is in a feverish state, no irritation should then be added to it; and every part therefore of the antiphlogistic regimen (130 to 133) except the application of cold, ought to be strictly observed.

Another exception to the general rule may occur when the tone of the stomach is weak, and when the patient has been before much accustomed to the use of strong drink; for then it may be allowable, and even necessry, to give some animal food, and a little wine.

562. That no irritation is to be added to the system during the paroxysms of gout, except in the cases mentioned, is entirely agreed upon among physicians:. but it is a more difficult matter to determine whether, during the time of paroxysms, any measures may be pursued to moderate the violence of reaction and of inflammation. Dr. Sydenham has given it as his opinion, that the more violent the inflammation and pain, the paroxysms will be the shorter, as well as the interval between the present and next paroxysm longer; and, if this opinion be admitted as just, it will forbid the use of any remedies which might moderate the inflammation; which is, to a certain degree, un-

doubtly necessary for the health of the body. On the other hand, acute pain presses for relief, and, although a certain degree of inflammation may seem absolutely necessary, it is not certain but that a moderate degree of it may answer the purpose: and it is even probable, that, in many cases, the violence of inflammation may weaken the tone of the parts, and thereby invite a return of paroxysms. It seems to me to be in this way, that, as the disease advances, the paroxysms become more frequent.

563. From the last considerations, it seems probable, that, during the time of paroxysms, some measures may be taken to moderate the violence of the inflammation and pain; and particularly, that, in first paroxysms, and in the young and vigorous, blood-letting at the arm may be practised with advantage: but I am persuaded, that this practice cannot be repeated often with safety; because blood-letting not only weakens the tone of the system, but may also contribute to produce plethora. I believe, however, that bleeding by leeches on the foot, and upon the inflamed part, may be practised and repeated with greater safety; and I have known instances of its having been practised with safety, to moderate and shorten paroxysms: but how far it may be carried, we have not had experience enough to determine.

564. Besides blood-letting, and the antiphlogistic regimen, it has been proposed to employ remedies for moderating the inflammatory spasm of the part affected, such as warm bathing and emollient poultices. These have sometimes been employed with advantage and safety; but, at other times, have been found to give occasion to a retrocession of the gout.

565. Blistering is a very effectual means of relieving and discussing a paroxysm of the gout; but has also frequently had the effect of rendering it retrocedent.

566. The stinging with nettles I consider as analogous to blistering; and I think it probable that it would be attended with the same danger.

567. The burning with moxa, or other substances, I consider as a remedy of the same kind. I have had indeed no evidence of this proving hurtful; but neither have I had any proper evidence of its having proved a radical cure.

568. Camphire, and some aromatic oils, have the power of allaying the pain, and of removing the inflammation from the part affected: but these remedies commonly make the inflammation only shift from one part to another, and therefore with

the hazard of its falling upon a part where it may be more dangerous; and they have sometimes rendered the gout retrocedent.

569. From these reflections (564 *et seq.*) it will appear that some danger must attend every external application to the parts affected, during a paroxysm; and that therefore the common practice of committing the person to patience and flannel alone, is established upon the best foundation.

570. Opiates give the most certain relief from pain; but, when given in the beginning of gouty paroxysms, they occasion these to return with greater violence. When, however, the paroxysms shall have abated in their violence, but still continue to return, so as to occasion painful and restless nights, opiates may be then given with safety and advantage, especially in the case of persons advanced in life, and who have been often affected with the disease.

571. When, after paroxysms have ceased, some swelling and stiffness shall remain in the joints, these symptoms are to be discussed by the diligent use of the flesh-brush.

572. Purging, immediately after a paroxysm, will be always employed with the hazard of bringing it on again.

573. I have now finished what has occurred to to be said upon the means of preventing and curing the regular gout; and shall now consider its management when it has become irregular; of which, as I have observed above, there are three different cases.

574. In the first case, which I have named the Atonic Gout, the cure is to be accomplished by carefully avoiding all debilitating causes; and by employing, at the same time, the means of strengthening the system in general, and the stomach in particular.

575. For the avoiding debilitating causes, I must refer to the doctrines of the Hygieine, as in 554.

576. For strengthening the system in general, I must recommend frequent exercise on horseback and moderate walking. Cold bathing also may answer the purpose, and be safely employed, if it appear to be powerful in stimulating the system, and be not applied when the extremities are threatened with any pain.

For supporting the tone of the system in general, when threatened with atonic gout, some animal food ought to be employed, and the more acescent vegetables ought to be avoided. In the same case, some wine also may be necessary; but it should be in moderate quantity, and of the least acescent kinds; and, if every kind of wine shall be found to increase the acidity of the stomach, ardent spirits and water must be employed.

577. For strengthening the stomach, bitters and the Peruvian bark may be employed; but care must be taken that they be not constantly employed for any great length of time. (Compare 557).

The most effectual method for strengthening the stomach is iron, which may be employed under various preparations; but, to me, the best appears to be the rust in fine powder, which may be given in very large doses.

For supporting the tone of the stomach, aromatics may be employed; but should be used with caution, as the frequent and large use of them may have an opposite effect; and they should therefore be given only in compliance with former habits, or for palliating present symptoms.

When the stomach happens to be liable to indigestion, gentle vomits may be frequently given; and proper laxatives should be always employed to obviate, or to remove, costiveness.

578. In the atonic gout, or in persons liable to it, to guard against cold is especially necessary; and the most certain means of doing this is, by repairing to a warm climate during the winter-season.

579. In the more violent cases of the atonic gout, blistering the lower extremities may be useful; but that remedy should be avoided when any pain threatens the extremities. In persons liable to the atonic gout, issues may be established in the extremities, as, in some measure, a supplement to the disease.

580. A second case of the irregular gout, is that which I have named the Retrocedent. When this affects the stomach and intestines, relief is to be instantly attempted by the free use of strong wines, joined with aromatics, and given warm; or if these shall not prove powerful enough, ardent spirits must be employed, and are to be given in a large dose. In moderate attacks, ardent spirits impregnated with garlic, or with asafœtida, may be employed; or, even without the ardent spirits, a solution of asafœtida with the volatile alkali may answer the purpose. Opiates are often an effectual remedy, and may be joined with aromatics, as in the Electuarium Thebaicum; or they may be usefully joined with volatile alkali and camphire. Musk has likewise proved useful in this disease.

When the affection of the stomach is accompanied with vomiting, this may be encouraged by taking draughts of warm wine, at first with water, and afterwards without it; having at length recourse, if necessary, to some of the remedies above mentioned, and particularly the opiates.

In like manner, if the intestines be affected with diarrhœa, this is to be at first encouraged, by taking plentifully of weak broth; and when this shall have been done sufficiently, the tumult is to be quieted by opiates.

581. When the retrocedent gout shall affect the lungs, and produce asthma, this is to be cured by opiates, by antispasmodics, and, perhaps, by blistering on the breast or back.

582. When the gout, leaving the extremities, shall affect the head, and produce pain, vertigo, apoplexy, or palsy, our resources are very precarious. The most probable means of relief is, blistering the head; and if the gout shall have receded very entirely from the extremities, blisters may be applied to these also. Together with these blisterings, aromatics, and the volatile alkali, may be thrown into the stomach.

583. The third case of the irregular gout is what I have named the Misplaced, that is, when the inflammatory affection of the gout, instead of falling upon the extremities, falls upon some internal part. In this case the disease is to be treated by blood-letting, and by such other remedies as

would be proper in an idiopathic inflammation of the same parts.

584. Whether the translation so frequently made from the extremities to the kidneys, is to be considered as an instance of the misplaced gout, seems, as we have said before, uncertain; but I am disposed to think it something different; and therefore am of opinion, that, in the Nephralgia Calculosa, produced upon this occasion, the remedies of inflammation are to be employed no farther than they may be otherwise sometimes necessary in that disease, arising from other causes than the gout.

# BOOK III.

## OF EXANTHEMATA, OR ERUPTIVE FEVERS.

585. THE diseases comprehended under this title, which make the third order of Pyrexiæ in our Nosology, are in general such as do not arise but upon occasion of a specific contagion applied, which first produces fever, and afterwards an eruption upon the surface of the body; and which diseases, for the most part, affect persons but once in the course of their lives.

586. Whether the character of the order may be thus limited, or if the order may be allowed to comprehend also the eruptive fevers produced by a matter generated in the body itself, and likewise those cases of eruption which do not depend upon contagion, or upon a matter generated be-

fore the fever, but upon a matter generated in the course of the fever, I am not ready to determine. Of the diseases enumerated by the nosologists as *Exanthemata*, there are certainly three different kinds, which may be distinguished by the circumstances mentioned in this and the preceding paragraph. Of the first kind are the Small-pox, the Chicken-pox, the Measles, the Scarlet Fever, and the Plague. Of the second kind seems to be the Erysipelas; and of the third kind I judge the Miliaria and Petechia to be. But as I am not sufficiently confident in the facts which should supdort these distinctions, or which would enable us to apply them in all cases; I go on in this book to treat of almost all the Exanthemata enumerated by preceding nosologists, with only some difference in the arrangement from what it was in my former editions.

## CHAP. I.

### OF THE SMALL-POX.

587. The Small-pox it a disease arising fro
contagion of a specific nature which first prod
a fever, and, on the third or fourth day the
produces an eruption of small red pimples. T

are afterwards formed into pustules, containing a matter, which, in the course of eight days from the time of the eruption, is changed into pus. After this, the matter dries, and falls off in crusts.

588. This is a general idea of the disease; but there are two particular forms or varieties of it, well known under the appellations of the *Distinct* and *Confluent*, which require to be specially described.

589. In the former, or the distinct small-pox, the eruptive fever is moderate, and appears to be evidently of the inflammatory kind or what we name a Synocha. It generally comes on about mid-day, with some symptoms of a cold stage, and commonly with a considerable languor and drowsiness. A hot stage is soon formed, and becomes more considerable on the second and third days. During this course, children are liable to frequent startings from their slumbers; and adults, if they are kept a-bed, are disposed to much sweating. On the third day, children are sometimes affected with one or two epileptic fits. Towards the end of the third day, the eruption commonly appears, and gradually increases during the fourth; appearing first upon the face, and successively on the inferior parts, so as to be completed over the whole body on the fifth day.

From the third day, the fever abates; and against the fifth, it entirely ceases. The eruption appears first in small red spots, hardly eminent, but by degrees rising into pimples. These are generally upon the face in small number; but, even when more numerous, they are separate and distinct from one another. On the fifth or sixth day, a small vesicle, containing an almost colourless or whey-coloured fluid, appears upon the top of each pimple. For two days, these vesicles increase in breadth only, and there is a small hollow pit in the middle; so that it is only against the eighth day that they are raised into spheroidical pustules.

These vesicles or pustules, from their first formation, continue to be surrounded with an exactly circular inflamed margin, which, when the pustules are numerous, diffuses some inflammation over the neighbouring skin, so as to give somewhat of a damask rose colour to the spaces between the pustules. As the pustules increase in size, if they be numerous on the face, against the eighth day the whole of the face becomes considerably swelled; and, in particular, the eyelids are so much swelled as entirely to shut the eyes.

As the disease thus proceeds, the matter in the pustules becomes by degrees more opaque and white, and at length of a yellowish colour. On the eleventh day, the swelling of the face is abated, and the pustules seem quite full. On the top of each a darker spot appears; and at this place the pustule, on the eleventh day, or soon after, is spontaneously broken, and a portion of the matter oozes out; in consequence of which, the pustule is shrivelled, and subsides; while the matter oozing out dries, and forms a crust upon its surface. Sometimes a little only of the matter oozes out; and what remains in the pustule becomes thick, and even hard. After some days, both the crusts and the hardened pustules fall off, leaving the skin which they covered of a brown red colour; and it is only after many days that the skin in these places resumes its natural colour. In some cases, where the matter of the pustules has been more liquid, the crusts formed by it are later in falling off, and the part they covered suffers some desquamation, which leaves in it a small pit or hollow.

This is the course of things on the face; and successively, the pustules on the rest of the body take the same. The matter of the pustules, on the arms and hands, is frequently absorbed; so that, at the height of the disease, these pustules appear as empty vesicles. On the tenth and eleventh days, as the swelling of the face subsides, a swelling arises in the hands and feet; but which, again, subsides, as the pustules come to maturity.

When the pustules on the face are numerous, some degree of pyrexia appears on the tenth and eleventh days, but disappears again after the pustules are fully ripened; or perhaps remains in a very slight degree till the pustules on the feet have finished their course. It is seldom that in the distinct small-pox the fever continues longer.

When the pustules on the face are numerous, some uneasiness in the throat, with a hoarseness of the voice, comes on upon the sixth or seventh day, and a thin liquid is poured out from the mouth. These symptoms increase with the swelling of the face; and the liquids of the mouth and throat becoming thicker, are more difficultly thrown out. There is, at the same time, some difficulty of swallowing; so that liquids taken in to be swallowed are frequently rejected, or thrown out by the nose. But all these affections of the fauces abate as the swelling of the face subsides.

590. In the other form of small-pox, or what is called the Confluent, the course of the disease is, in general, the same with what we have described; but the symptoms of every stage are more violent, and several of the circumstances are different.

In particular, the eruptive fever is more violent. The pulse is more frequent and more contracted, approaching to that state of pulse which is found in typhus. The coma is more considerable, and there is frequently a delirium. Vomiting, also, is a common symptom, especially at the coming on of the disease. In very young infants, epileptic fits are sometimes frequent on the first days of the disease, and sometimes prove fatal before any eruption appears; or they usher in a very confluent and putrid small-pox.

591. The eruption appears more early on the third day, and it is frequently preceded or accompanied with an erisipelatous efflorescence. Sometimes the eruption appears in clusters, like that of the measles. When the eruption is completed, the pimples are always more numerous upon the face, and at the same time smaller and less eminent. After the eruption, the fever suffers some remission, but never goes off entirely; and, after the fifth or sixth day, it again increases, and continues considerable through the remaining course of the disease.

The vesicles formed on the tops of the pimples appear sooner; and while they increase in breadth, do not retain a circular, but are every way of an irregular figure. Many of them run into one another, insomuch that very often the face is covered rather with one vesicle than with a number of pustules. The vesicles, so far as they are anywise separated, do not arise to a spheroidical form, but remain flat, and sometimes the whole of the face is of an even surface. When the pustules are in any measure separated, their circumference is not bounded by an inflamed margin, and the part of the skin that is free from pustules is commonly pale and flaccid.

The liquor that is in the pustules changes from a clear to an opaque appearance, and becomes whitish or brownish, but never acquires the yellow colour and thick consistence that appear in the distinct small-pox.

592. The swelling of the face which attends the distinct small-pox, when they are numerous, and almost then only, always attends the confluent, comes on more early and arises to a greater degree; but abates on the tenth day, and on the eleventh still more. At this time the pustules or vesicles break, and shrivelling pour out a liquor that is formed into brown or black crusts, which do not fall off for many days after. Those of the face, in falling off, leave the parts they cover subject to a desquamation, which pretty certainly produces pittings.

On the other parts of the body, the pustules of the confluent small-pox are more distinct than upon the face, but never acquire the same maturity and consistence of pus as in the properly distinct kind.

The salivation which only sometimes attends the distinct small-pox, very constantly attends the confluent; and both the salivation and the affection of the fauces above mentioned, are, especially in adults, in a higher degree. In infants, a diarrhœa comes frequently in place of the salivation.

In the confluent small-pox, there is often a considerable putrescency of the fluids, as appears from petechiæ, from serous vesicles, under which the skin shews a disposition to gangrene, and from bloody urine or other hæmorrhagy; all which symptoms frequently accompany this disease.

In the confluent small-pox, the fever, which had only suffered a remission from the time of eruption to that of maturation, is often, at or immediately after this period, renewed with considerable violence. This is what has been called the secondary fever; and is, in different cases, of various duration and event.

593. We have thus endeavoured to describe the various circumstances of the small-pox; and from the difference of these circumstances, the event of the disease may be determined. The whole of the prognosis may be nearly comprised in the following propositions.

The more exactly the disease retains the form of the distinct kind, it is the safer; and the more completely the disease takes the form of the confluent kind, it is the more dangerous.

It is only when the distinct kind shews a great number of pustules on the face, or otherwise, by fever or putrescency, approaches to the circumstances of the confluent, that it is attended with any danger.

In the confluent small-pox there is always danger; and this is always more considerable and certain, according as the fever is more violent and permanent, and especially as the marks and symptoms of putrescency are more evident.

When the putrid disposition is very great, the disease sometimes proves fatal before the eighth day; but in most cases it is on the eleventh that death happens, and sometimes it is put off till the fourteenth or seventeenth day.

Though the small-pox should not be immediately fatal, the more violent kinds are often followed by a morbid state of the body, of various kind and event. These consequences, as I judge, may be imputed sometimes to an acrid matter produced by the preceding disease, and deposited in different parts; and sometimes to an inflammatory diathesis produced, and determined to particular parts of the body.

594. It is, I think, agreed among practitioners, that, in the different cases of small-pox, the difference chiefly depends upon the appearance of distinct or confluent; and, from the above description of these kinds, it will appear, that they chiefly differ in the period of the eruption, in the number of pustules produced, in the form of the pustules, in the state of the matter contained in them, in the continuance of the fever, and, lastly, in the danger of the disease.

595. Upon inquiring into the causes of these

differences, we might readily suspect, that they depended upon a difference of the contagion producing the disease. This, however, is not probable: for there are innumerable instances of the contagion, arising from a person labouring under the small-pox of the distinct kind, producing the confluent; and on the contrary. Since the practice of inoculation became frequent, we have known the same variolous matter produce in one person the distinct, and in another the confluent small-pox. It is therefore highly probable, that the difference of the small-pox does not depend upon any difference of the contagion, but upon some difference in the state of the persons to whom it is applied, or in the state of certain circumstances concurring with the application of the contagion.

596. To find out wherein the difference in the state of the persons to whom the contagion of the small-pox is applied consists, I observe, that the difference between the distinct and confluent small-pox consists especially in the number of pustules produced; which, in the distinct, are generally few; in the confluent, always many. If, therefore, we shall be able to discover what, in the state of different persons, can give occasion to more or fewer pustules, we shall probably be able to account for all the other differences of the distinct and confluent small-pox.

597. It is evident, that the contagion of the small-pox is a ferment with respect to the human fluids, and assimilates a great part of them to its own nature; and it is probable, that the quantity thus assimilated, is, in proportion to the bulk of their several bodies, nearly the same in different persons. This quantity passes again out of the body, partly by insensible perspiration, and partly by being deposited in pustules; but if the quantities generated be nearly equal, the quantities passing out of the body by the two ways mentioned are very unequal in different persons; and, therefore, if we can explain the causes which determine more to pass by the one way than by the other, we may thereby discover the causes which give occasion to more pustules in one person than in another.

598. The causes which determine more of the variolous matter to pass by perspiration, or to form pustules, are probably certain circumstances of the skin, that determine more or less of the variolous matter to stick in it, or to pass freely through it.

599. The circumstance of the skin, which seems to determine the variolous matter to stick in it, is a certain state of inflammation, depending much upon the heat of it. Thus we have many instances of parts of the body, from being more heated,

having a greater number of pustules than other parts. In the present practice of inoculation, in which few pustules are produced, much seems to be owing to the care that is taken to keep the skin cool. Parts covered with plasters, especially with those of a stimulant kind, have more pustules than other parts. Further, certain circumstances, such as adult age, and full living, determining to a phlogistic diathesis, seem to produce a greater number of pustules; while the contrary circumstances have contrary effects.

600. It is therefore probable, that an inflammatory state of the whole system, and more particularly of the skin, gives occasion to a greater number of pustules: and the causes of this may likewise produce most of the other circumstances of the confluent small-pox; such as the period of eruption; the continuance of the fever; the effusion of a more putrescent matter, and less fit to be converted into pus; and, what arises from thence, the form and other circumstances of the pustules.

601. Having thus attempted to account for the chief difference which occurs in the state of the small-pox, we shall now try the truth of our doctrine, by its application to practice.

602. In considering the practice, we view it first, in general, as suited to render the disease

more generally benign and safe, and this by the practice of inoculation.

603. It is not necessary here to describe the operation of inoculating; and what we name the practice of inoculation, comprehends all the several measures which precede or follow that operation, and are supposed to produce its salutary effects.

These measures are chiefly the following:

1, The choosing for the subject of inoculation persons otherwise free from disease, and not liable, from their age or other circumstances, to any incidental disease;

2, The choosing a person at the time of life most favourable to a mild disease;

3, The choosing for the practice a season the most conducive to the mildness of the disease;

4, The preparing the person to be inoculated, by abstinence from animal food for some time before inoculation;

5, The preparing the person by courses of mercurial and antimonial medicines;

6, The taking care, at the time of inoculation, to avoid cold, intemperance, fear, or other circumstances which might aggravate the future disease;

7, After these preparations and precautions, the choosing a fit matter to be employed in inoculation, by taking it from a person of a sound constitution, and free from any disease or suspicion of it; by taking it from a person who has had the small-pox of the most benign kind; and, lastly, by taking the matter from such persons, as soon as it has appeared in the pustules, either in the part inoculated, or on other parts of the body;

8, The introducing, by inoculation, but a small portion of the contagious matter;

9, After inoculation, the continuing the vegetable diet, as well as the employment of mercurial and antimonial medicines; and, at the same time, frequently employing purgatives

10, Both before and after inoculation, taking care to avoid external heat, either from the sun, artificial fires, warm chambers, much clothing, or being much in bed; and, on the contrary, exposing the person to a free and cool air;

11, Upon the appearance of the eruptive fever, the rendering that moderate by the employment of purgatives; by the use of cooling and antiseptic acids; and especially, by exposing the person frequently to a cool and even a cold air, at the same time giving freely of cold drink;

12, After the eruption, the continuing the application of cold air, and the use of purgatives during the course of the disease, till the pustules are fully ripened.

604. These are the measures proposed and practised in the latest and most improved state of inoculation; and the advantages obtained by the

whole of the practice, or at least by most of the measures above mentioned, are now ascertained by a long experience to amount to this, that in ninety-nine cases of the hundred, inoculation gives a distinct small-pox only, and that also very generally of the mildest form: but it will be still useful, for the proper conduct of inoculation, to consider the importance and utility of the several measures above mentioned, that we may thereby more exactly determine upon what the advantages of inoculation more certainly depend.

605. As the common infection may often seize persons labouring under another disease, which may render the small-pox more violent, it is obvious that inoculation must have a great advantage, by avoiding such concurrence. But, as the avoiding such concurrence may often, in the meanwhile, leave persons exposed to the common infection, it merits inquiry, whether every diseased state should restrain from the practice of inoculation, or what are the particular diseases that should do so. This is not yet sufficiently ascertained by observation; and we have frequently remarked, that the small-pox have often occurred with a diseased state of the body, without being thereby rendered more violent. In particular, we have observed, that a scrofulous habit, or even the presence of scrofula, did not render the small-pox more violent; and we have observed also, that

several diseases of the skin are equally innocent. I am of opinion, that they are the diseases of the febrile kind, or ailments ready to induce or aggravate a febrile state, that especially give the concurrence which is most dangerous with the small-pox. I dare not attempt any general rules; but I am disposed to maintain, that, though a person be in a diseased state, if that state be of uncertain nature and effect, and at the same time the small-pox be exceedingly rife, so as to render it extremely difficult to guard against the common infection, it will always be safer to give the small-pox by inoculation, than to leave the person to take them by the common infection.

606. Though inoculation has been practised with safety upon persons of all ages; yet, from what has actually occurred in the cases of common infection, and from several other considerations, there is reason to conclude, that adults are more liable to a violent disease than persons of younger years. At the same time, it is observed, that children, in the time of their first dentition, are liable, from this irritation, to have the small-pox rendered more violent; and that infants, before the time of dentition, upon receiving the contagion of the small-pox, are liable to be affected with epileptic fits, which frequently prove fatal. It is, therefore, upon the whole, evident, that, though circumstances may admit, and even render inocu-

lation at any age proper; yet, for the most part, it will be still more advisable to choose persons at an age, after the first dentition is over, and before the time of puberty.

607. Though inoculation has been practised with safety at every season of the year; yet, as it is certain that the cold of winter may increase the inflammatory, and the heats of summer increase the putrescent state of the small-pox, it is highly probable that inoculation may have some advantage, from avoiding the extremes either of heat or cold.

608. Although the original temperament and constitutions of men are not to be readily changed; it is sufficiently certain, that the conditions of the human body may, by various causes, in many respects be occasionally very much changed: and therefore, as the use of animal food may increase both the inflammatory and putrescent state of the human body, so it must render persons, on receiving the contagion of the small-pox, less secure against a violent disease; and, therefore, inoculation may derive some advantage from abstinence from animal food for some time before the inoculation is performed: but I am of opinion, that a longer time than that usually prescribed may be often necessary; and I am persuaded that the Scottish mothers, who avoid giving their children

animal food till they are past the small-pox, render this disease in them of a milder kind.

609. I cannot deny that mercurial and antimonial medicines may have some effect in determining to a more free perspiration, and therefore may be of some use in preparing a person for the small-pox; but there are many observations which render me doubtful as to their effect. The quantity of both these medicines, particularly of the antimony, commonly employed, is too inconsiderable to produce any effect. It is true, that the mercurials have often been employed more freely; but even their salutary effects have not been evident, and their mischievous effects have sometimes appeared. I doubt, therefore, upon the whole, if inoculation derives any advantage from these pretended preparatory courses of medicines.

610. As it has been often observed, in the case of almost all contagions, that cold, intemperance, fear, and some other circumstances, concurring with the application of the contagion, have greatly aggravated the future disease, so it must be the same in the case of the small-pox; and it is undoubted, that inoculation must derive a great, and perhaps its principal, advantage, from avoiding the concurrences above mentioned.

611. It has been commonly supposed, that in-

oculation has derived some advantage from the choice of the matter employed in it; but, from what has been observed in 595, it must appear very doubtful if any choice be necessary, or can be of any benefit in determining the state of the disease.

612. It has been supposed by some, that inoculation has an advantage, by introducing a small portion only of the contagious matter: but this rests upon an uncertain foundation. It is not known what quantity is introduced by the common infection, and it may be a small quantity only. Although it were larger than that thrown in by inoculation, it is not ascertained that the circumstance of quantity would have any effect. A certain quantity of ferment may be necessary to excite fermentation in a given mass; but that quantity given, the fermentation and assimilation are extended to the whole mass; and we do not find that a greater quantity than is just necessary, either increases the activity of the fermentation, or more certainly secures the assimilation of the whole. In the case of the small-pox, a considerable difference in the quantity of contagious matter introduced, has not discovered any effect in modifying the disease.

613. Purging has the effect of diminishing the activity of the sanguiferous system, and of obviat-

ing its inflammatory state. It is therefore probable, that the frequent use of cooling purgatives is a practice attending inoculation which may be of considerable advantage; and, probably, it is also useful by diminishing the determination to the skin. It appears to me, that mercurials and antimonials, as they are commonly managed, are useful only as they make a part of the purging course.

614. It is probable, that the state of the small-pox depends very much upon the state of the eruptive fever, and particularly upon moderating the inflammatory state of the skin; and, therefore, it is probable, that the measures taken for moderating the eruptive fever and inflammatory state of the skin, afford the greatest improvement which has been made in the practice of inoculation. The tendency of purging, and the use of acids for this purpose, is sufficiently obvious; and upon the same grounds, we should suppose, that blood-letting night be useful; but probably this has been omitted, for the same reason that perhaps might have ed to the omission of other remedies also; which s, that we have found a more powerful and efectual one in the application of cold air, and the se of cold drink. Whatever doubts or difficulties ur theory might present to us on this subject, they nay be entirely neglected, as the practice of Indosan had long ago, and the practice of this country as lately, by a large and repeated experience, as-

certained the safety and efficacy of this remedy: and as it may and can be more certainly employed with the practice of inoculation, than it can be in cases of common infection, it must give a singular advantage to the former.

615. After the eruption, when a few pimples only have appeared on the face, the continuing the application of cold air, and the employment of purgatives, has indeed been the practice of many inoculators: but, I think, these practices cannot be said to give any peculiar advantages to inoculation; for when the state of the eruption is determined, when the number of pustules is very small, and the fever has entirely ceased, I hold the safety of the disease to be absolutely ascertained, and the further use of remedies entirely superfluous. In such cases, I judge the use of purgatives to be not only unnecessary, but that they may be often hurtful.

616. I have thus considered the several circumstances and practices accompanying inoculation, and have endeavoured to ascertain the utility and importance of each. Upon the whole, I hope I have sufficiently ascertained the general utility and great advantage of this practice, especially consisting in this, that if certain precautions, preparations, and remedies, are of importance, all of them can be employed with more certainty in the practice of inoculation, than in the case of common infection.

It remains now, that I should offer some remarks on the conduct of the small-pox, as received by infection, or even when, after inoculation, the symptoms shall prove violent. The latter sometimes happens, although every precaution and remedy have been employed. The cause of this is not well known; but it appears to be commonly owing to a disposition of the fluids to putrescency. But, however this may be, it will appear, that not only in the case of common infection, but even in that of inoculation, there may be occasion for studying the conduct of this disease, in all its possible varying circumstances.

617. When, from the prevailing of small-pox as an epidemic, and more especially when it is known that a person not formerly affected with the disease has been exposed to the infection, if such person should be seized with the symptoms of fever, there can be little doubt of its being an attack of the small-pox; and therefore he is to be treated in every respect as if the disease had been received by inoculation. He is to be freely exposed to a cool air, to be purged, and to have cooling acids given liberally.

618. If these measures moderate the fever, nothing more is necessary: but if the nature of the fever attacking a person be uncertain; or if, with suspicions of the small-pox, the symptoms of the

fever be violent; or even if, knowing the disease to be small-pox, the measures mentioned (597) shall not moderate the fever sufficiently; it will be proper to let some blood: and this will be more especially proper, if the person be an adult, of a plethoric habit, and accustomed to full living.

619. In the same circumstances, we judge it will be always proper to give a vomit, as useful in the commencement of all fevers, and more especially in this, where a determination to the stomach appears from pain and spontaneous vomiting.

620. It frequently happens, especially in infants, that, during the eruptive fever of the small-pox, convulsions occur. Of these, if only one or two fits appear in the evening preceding the eruption, they give a favourable prognostic of a mild disease, and require no remedy; but if they occur more early, and be violent and frequently repeated, they are very dangerous, and require a speedy remedy. For this purpose, bleeding is hardly ever of service; blistering always comes too late; and the only remedy I have found effectual, is an opiate given in a large dose.

621. These are the remedies necessary during the eruptive fever; and if, upon the eruption, the pimples upon the face be very few and distinct, the disease is no further of any danger, requires

no remedies, and the purgatives, which, as has been said before, are by some practitioners continued, prove often hurtful.

But when, upon the eruption, the pimples on the face are very numerous; when they are not distinct; and especially when, upon the fifth day, the fever does not suffer a considerable remission; the disease will still require a great deal of attention.

622. If, after the eruption, the fever shall continue; the avoiding heat, and the continuing to expose the body to a cool air, will still be proper. If the fever be considerable, with a full and hard pulse, in an adult person, a bleeding will be necessary; and more certainly, a cooling purgative. It is, however, seldom that a repetition of the bleeding will be proper, as a loss of strength does usually come on very soon; but the repetition of a purgative, or the frequent use of laxative glysters, is commonly useful.

623. When a loss of strength, with other marks of a putrescent tendency of the fluids appears, it will be necessary to exhibit the Peruvian bark in substance, and in large quantity. In the same case, the free use of acids, and of nitre, is useful; and it is commonly proper also to give wine very freely.

624. From the fifth day of the disease, onward

through the whole course of it, it is proper to give an opiate once or twice a-day; taking care, at the same time, to obviate costiveness, by purgatives, or laxative glysters.

625. In a violent disease, from the eighth to the eleventh day, it is proper to lay on blisters successively on different parts of the body, and that without regard to the parts being covered with pustules.

626. If, in this disease, the tumour of the fauces be considerable; the deglutition difficult; the saliva and mucus viscid, and with difficulty thrown out; it will be proper to apply blisters to the external fauces, and to employ diligently detergent gargles.

627. During the whole course of the disease, when any considerable fever is present, the frequent exhibition of antimonial medicines, in nauseating doses, has been found useful; and these, for the most part, sufficiently answer the purpose of purgatives.

628. The remedies mentioned from 622, to 626, are those frequently necessary, from the fifth day, till the suppuration is finished. But as, after that period, the fever is sometimes continued and increased; or, as sometimes, when, after there has been little or no fever before, a fever now arises,

and continues with considerable danger; this is what is called the secondary fever, and requires particular treatment.

629. When the secondary fever follows the distinct small-pox, and the pulse is full and hard, the case is to be treated as an inflammatory affection by bleeding and purging. But, if the secondary fever follow the confluent small-pox, and be a continuance or exacerbation of the fever which had subsisted before, it is to be considered as of the putrid kind; and in that case, bleeding is improper. Some purging may be necessary; but the remedies to be chiefly depended on, are the Peruvian bark and acids.

When the secondary fever first appears, whether it is after a distinct or a confluent small-pox, it will be useful to exhibit an antimonial emetic in nauseating doses, but in such a manner as to produce some vomiting.

630. For avoiding the pits which frequently follow the small-pox, many different measures have been proposed; but none of them appear to be sufficiently certain.

## CHAP. II.

### OF THE CHICKEN-POX.

631. THIS disease seems to depend upon a specific contagion, and to affect persons but once in their lives. It is hardly ever attended with any danger; but as it seems frequently to have given occasion to the supposition of a person's having the small-pox twice, it is proper to study this disease, and to distinguish it from the genuine small-pox.

632. This may be generally done by attending to the following circumstances.—

The eruption of the chicken-pox comes on with very little fever preceding it, or with fever of no determined duration.

The pimples of the chicken-pox, more quickly than those of the small-pox, are formed into little vesicles or pustules.

The matter in these pustules remains fluid, and never acquires the colour or consistence of the pus which appears in the pustules of the small-pox.

The pustules of the chicken-pox are always, in three or four days from their first appearance, formed into crusts.

See Dr. Heberden in Med. Transact, Vol, I, Art. xvii.

## CHAP. III.

### OF THE MEASLES.

633. THIS disease also depends upon a specific contagion, and affects persons but once in their lives.

634. It occurs most frequently in children; but no age is exempted from it, if the persons have not been subjected to it before.

635. It commonly appears as an epidemic, first in the month of January, and ceases soon after the summer solstice; but various accidents, introducing the contagion, may produce the disease at other times of the year.

635. The disease always begins with a cold stage, which is soon followed by a hot, with the ordinary symptoms of thirst, heat, anorexia, anxiety, sickness, and vomiting; and these are more or less considerable in different cases. Sometimes from the beginning the fever is sharp and violent; often, for the first two days, it is obscure and inconsiderable, but always becomes violent before the eruption, which usually happens upon the fourth day.

637. This eruptive fever, from its commencement, is always attended with hoarseness, with a frequent hoarse dry cough, and frequently with some difficultly of breathing. At the same time, the eye-lids are somewhat swelled, the eyes are a little inflamed, and pour out tears; and together with these symptoms, there is a coryza, and frequent sneezing. For the most part, a constant drowsiness attends the beginning of this disease.

638. The eruption, as we have said, commonly appears upon the fourth day, first on the face, and successively on the lower parts of the body. It discovers itself first in small red points; but, soon after, a number of these appear in clusters, which do not rise into visible pimples, but by the touch are found to be a little prominent. This is the case on the face; but on other parts of the body, the prominence, or roughness, is hardly to be perceived. On the face the eruption retains its redness, or has that increased for two days; but, on the third, the vivid redness is changed to a brownish red: and, in a day or two more, the eruption entirely disappears, while a meally desquamation takes place. During the whole time of the eruption, the face is somewhat turgid, but seldom considerably swelled.

639. Sometimes, after the eruption has appeared, the fever ceases entirely; but this is seldom

the case; and more commonly the fever continues, or is increased after the eruption, and does not cease till after the desquamation. Even then the fever does not always cease, but continues with various duration and effect.

640. Though the fever happen to cease, upon the eruption's taking place, it is common for the cough to continue till after the desquamation, and sometimes much longer.

In all cases, while the fever continues, the cough also continues, generally with an increase of the difficulty of breathing; and both of these symptoms sometimes arise to a degree that denotes a pneumonic affection. This may arise at any period of the disease; but very often it does not come on till after the desquamation of the eruption.

After the same period, also, a diarrhœa frequently comes on, and continues for some time.

641. It is common for the measles, even when they have not been of a violent kind, to be succeeded by inflammatory affections, particularly ophthalmia and phthisis.

642. If the blood be drawn from a vein during the measles, with the circumstances necessary to favour the separation of the gluten, this always appears separated, and lying on the surface of the crassamentum, as in inflammatory diseases.

643. For the most part the measles, even when violent, are without any putrid tendency; but in some cases such a tendency appears, both in the course of the disease, and especially after the ordinary course of it is finished. See Dr. Watson, in London Medical Observations, Vol. IV, Art. xi.

644. From what is delivered, from 637 to 642, it will appear, that the measles are distinguished by a catarrhal affection, and by an inflammatory diathesis, to a considerable degree; and therefore the danger attending them arises chiefly from the coming on of a pneumonic inflammation.

645. From this consideration it will be obvious, that the remedies especially necessary, are those which may obviate and diminish the inflammatory diathesis; and therefore, in a particular manner, blood-letting. This remedy may be employed at any time in the course of the disease, or after its ordinary course is finished. It is to be employed, more or less, according to the urgency of the symptoms of fever, cough, and dyspnœa; and generally may be employed very freely. But, as the symptoms of pneumonic inflammation seldom come on during the eruptive fever; and, as this fever is sometimes violent immediately before the eruption, though a sufficiently mild disease be to follow; so bleeding is seldom very necessary during the

eruptive fever, and may often be reserved for the periods of greater danger which are perhaps to ensue.

646. In all cases of measles, where there are no marks of putrescency, and where there is no reason, from the known nature of the epidemic, to apprehend putrescency, bleeding is the remedy to be depended upon: but assistance may also be obtained from cooling purgatives; and particularly from blistering on the sides, or between the shoulders.

647. The dry cough may be alleviated by the large use of demulcent pectorals, mucilaginous, oily, or sweet. It may, however be observed, with respect to these demulcents, that they are not so powerful in involving and correcting the acrimony of the mass of blood as has been imagined; and that their chief operation is by besmearing the fauces, and thereby defending them from the irritation of acrids, either arising from the lungs, or distilling from the head.

648. For moderating and quieting the cough in this disease, opiates certainly prove the most effectual means, whenever they can be safely employed. In the measles, in which an inflammatory state prevails in a considerable degree, opiates may

be supposed to be inadmissible; and, in those cases in which a high degree of pyrexia and dyspnœa shew either the presence, or at least the danger, of pneumonic inflammation, I think that opiates might be very hurtful. In cases, however, in which the dispnœa is not considerable, and where bleeding, to obviate or abate the inflammatory state, has been duly employed, and where the cough and watchfulness are the urgent symptoms, I think that opiates may be safely exhibited, and with great advantage.

I think, further, that, in all the exanthemata, there is an acrimony diffused over the system, which gives a considerable irritation: and, for obviating the effects of this, opiates are useful, and always proper, when no particular contra-indication prevails.

649. When the desquamation of the measles is finished, though there should then be no disorder remaining, physicians have thought it necessary to purge the patient several times, with a view to draw off the dregs of this disease, that is, a portion of the morbific matter which is supposed to remain long in the body. I cannot reject the supposition; but, at the same time, cannot believe, that the remains of the morbific matter, diffused over the whole mass of blood, can be entirely drawn off by purging; and it appears to me, that,

to avoid the consequences of the measles, it is not the drawing off the morbific matter which we need to study, so much as the obviating and removing the inflammatory state of the system which had been induced by the disease. With this last view, indeed, purging may still be a proper remedy; but bleeding, in proportion to the symptoms of inflammatory disposition, is yet more so.

650. From our late experience of the benefit of cold air in the eruptive fever of the small-pox, some physicians have been of opinion, that the practice might be transferred to the measles: but we have not yet had trials sufficient to ascertain this. There is no doubt that external heat may be very hurtful in the measles, as in most other inflammatory diseases; and therefore the body ought to be kept in a moderate temperature during the whole course of the measles; but how far, at any period of the disease, cold air may be applied with safety, we are yet uncertain. Analogy, though so often the resource of physicians, is in general fallacious; and further, though the analogy with the small-pox might lead to the application of cold air during the eruptive fever of the measles, the analogy with catarrh seems to be against the practice. After the eruption had appeared upon the skin, we have had many instances of cold air making it disappear, and thereby producing much disorder in the system; and have al-

so had frequent examples of such disorder being removed by restoring the heat of the body, and thereby again bringing forth the eruption.

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## CHAP. IV.

### OF THE SCARLET FEVER.

651. It may be doubted if the scarlet fever be a disease specifically different from the cynanche maligna above described. The latter is almost always attended with a scarlet eruption; and, in all the instances I have seen of what may be called the scarlet fever, the disease, in almost every person affected, has been attended with an ulcerous sore throat.

652. This view of the matter may create some doubt; but I am still of opinion, that there is a scarlet fever which is a disease specifically different from the cynanche maligna.

Dr. Sydenham has described a scarlet fever, which he had seen prevailing as an epidemic, with all the circumstances of the fever and eruption, without its being accompanied with any affection of the throat; at least he does not take notice of any such affection, which such an accurate observer could not fail to have done, if any such symptom, as we have commonly seen making a principal part of the disease, had attended those cases which he had observed. Several other writers have described the scarlet fever in the same manner, and I know physicians who have seen the disease in that form; so that there can be no doubt of there being a scarlet fever not necessarily connected with an ulcerous sore throat, and therefore a disease different from the cynanche maligna.

653. But, further, although in all the instances of scarlet fever which I have seen, (and in the course of forty years I have seen it six or seven times prevailing as an epidemic in Scotland), the disease, in almost all the persons affected, was attended with an ulcerous sore throat, or was what Sauvages names the Scarlatina Anginosa; and although, in some instances, the ulcers of the throat were of a putrid and gangrenous kind, and at the same time the disease in all its symptoms resembled very exactly the cynanche maligna; yet I am still persuaded, that not only the scarlatina of Sydenham, but that even the scarlatina anginosa of Sauvages, is a different disease from the cynanche maligna; and I have formed this opinion from the following considerations.—

654. 1st, There is a scarlet fever entirely free from any affection of the throat, which sometimes

prevails as an epidemic; and therefore there is a specific contagion producing a scarlet eruption without any determination to the throat.

2dly, The Scarlatina, which, from its matter being generally determined to the throat, may be properly termed Anginosa, has, in many cases of the same epidemic, been without any affection of the throat; and therefore the contagion may be supposed to be more especially determined to produce the eruption only.

3dly, Though in all the epidemics that I could allege to be those of the scarlatina anginosa, there have been some cases which, in the nature of the ulcers, and in other circumstances, exactly resembled the cases of the cynanche maligna: yet I have as constantly remarked, that these cases have not been above one or two in a hundred, while the rest have all of them been with ulcers of a benign kind, and with circumstances hereafter to be described, somewhat different from those of the cynanche maligna.

4thly, On the other hand, as I have two or three times seen the cynanche maligna epidemically prevailing; so, among the persons affected, I have seen instances of cases as mild as those of the scarlatina anginosa usually are: but here the proportion was reversed; and these mild cases were not one fifth of the whole, while the rest were of the putrid and malignant kind.

*Lastly*, It applies to the same purpose to observe, that, of the cynanche maligna, most of the instances terminate fatally, while, on the other hand, that is the event of very few of the cases of the scarlatina anginosa.

655. From these considerations, though it may appear that there is some affinity between the cynanche maligna and scarlatina anginosa, it will still remain probable, that the two diseases are specifically different. I have been at some pains to establish this opinion: for, from all my experience, I find, that those two diseases require a different treatment; and I therefore now proceed to mention more particularly the circumstances of the scarlatina anginosa.

656. This disease commonly appears about the beginning of winter, and continues throughout the season. It comes on with some cold shivering, and other symptoms of the fever which usually introduces the other exanthemata. But here there is no cough, nor the other catarrhal symptoms which attend the measles; nor is there that anxiety and vomiting which commonly introduce the confluent small-pox, and which more certainly introduce the cynanche maligna.

Early in the disease, some uneasiness is felt in the throat; and frequently the deglutition is difficult, generally more so than in the cynanche maligna. Upon looking into the fauces, a redness and swelling appear, in colour and bulk approaching to the state of these symptoms in the cynanche tonsillaris; but, in the scarlatina, there is always more or less of sloughs, which seldom appear in the cynanche tonsillaris; and the sloughs are commonly whiter than those in the cynanche maligna.

While these appearances are discovered in the fauces, upon the third or fourth day a scarlet eruption appears on the skin, in the same form as described in 314. This eruption is commonly more considerable and universal than in the cynanche; but it seldom produces a remission of the fever. The eruption for the most part remains till the third or fourth day after its first appearance; but then goes off, ending in a meally desquamation. At this time the fever usually subsides; and generally, at the same time, some degree of sweat comes on.

The sloughs on the fauces, which appeared early in the disease, continue for some days, but then falling off, discover the swelling abated, and an ulcer formed on one or both tonsils shewing a laudable pus; and soon after the fever has subsided, these ulcers heal up entirely. For the most part, this disease has much less of coryza attending it than the cynanche maligna; and, when there is a coryza attending the scarlatina, the matter discharged is less acrid, and has not the fetid smell which it has in the other disease.

In the Scarlatina, when the eruption has entirely disappeared, it frequently happens, that, in a few days after, the whole body is affected with an anasarcous swelling; which, however, in a few days more, gradually subsides.

We have thus described the most common circumstances of the Scarlatina Anginosa; and have only to add, that, during the time of its being epidemic, and especially upon its first setting in, there are always a few cases in which the circumstances of the disease approach very nearly to those of the cynanche maligna; and it is only in these instances that the disease is attended with any danger.

657. With respect to the cure of this disease, when the symptoms of it are nearly the same with those of the cynanche maligna, it requires exactly the same treatment as directed in 317.

658. When the scarlet fever appears, without any affection of the throat, the treatment of it is very simple, and is delivered by Dr. Sydenham. An antiphlogistic regimen is commonly all that is requisite; avoiding, on one hand, the application of cold air; and, on the other, any increase of external heat.

659. In the ordinary state of the Scarlatina Anginosa, the same treatment is, in most cases, sufficient; but as here the fever is commonly more

considerable, and there is likewise an affection of the throat, some remedies may be often necessary.

660. When there is a pretty high degree of fever, with a full pulse, and a considerable swelling of the tonsils, bleeding is very proper, especially in adults; and it has been frequently practised with advantage: but as, even in the cynanche tonsillaris, much bleeding is seldom necessary (305); so, in the scarlatina, when the state of the fever and the appearances of the fauces render the nature of the disease ambiguous, bleeding may be omitted; and, if not altogether avoided, it should at least not be large, and ought not to be repeated.

661. Vomiting, and especially nauseating doses of emetics, notwithstanding the inflamed state of the fauces, have been found very useful in this disease. An open belly is proper in every form of this disease; and when the nauseating doses of emetics operate a little downwards, they are more serviceable.

662. In every form of the Scarlatina Anginosa, through the whole course of it, detergent gargles should be employed, and more or less as the quantity of sloughs and the viscid mucus in the fauces may seem to require.

663. Even in the milder states of the Scarlatina Anginosa, it has been common with practitioners to exhibit the Peruvian bark through the whole course of the disease; but we are assured, by much experience, that in such cases it may be safely omitted, though in cases anywise ambiguous it may not be prudent to neglect this remedy.

664. The anasarcous swelling, which frequently follows the Scarlatina Anginosa, seldom requires any remedy; and, at least, the purgatives so much inculcated, and so commonly exhibited, soon take off the anasarca.

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## CHAP. V.

### OF THE PLAGUE.

### SECT. I.

### *Of the Phenomena of the Plague.*

665. THE Plague is a disease which always arises from contagion; which affects many persons about the same time; proves fatal to great numbers; generally produces fever; and, in most persons, is attended with buboes or carbuncles.

666. These are the circumstances which, taken together, give the character of the disease; but it is accompanied with many symptoms almost peculiar to itself, that, in different persons, are greatly diversified in number and degree, and should be particularly studied. I would wish to lay a foundation for this; but think it unfit for a person who has never seen the disease to attempt its particular history. For this, therefore, I must refer to the authors who have written on the subject; but allowing those only to be consulted, who have themselves seen and treated the disease in all its different forms.

667. From the accounts of such authors, it appears to me, that the circumstances which particularly distinguish this disease, and especially the more violent and dangerous states of it, are,

1st, The great loss of strength in the animal functions, which often appears early in the disease.

2dly, The stupor, giddiness, and consequent staggering, which resembles drunkenness, or the headach and various delirium; which are all of them symptoms denoting a great disorder in the functions of the brain.

3dly, The anxiety, palpitation, syncope, and especially the weakness and irregularity of the pulse, which denote a considerable disturbance in the action of the heart.

4thly, The nausea and vomiting, particularly the vomiting of bile, which shews an accumulation of vitiated bile in the gall-bladder, and biliary ducts, and from thence derived into the intestines and stomach; all of which symptoms I suppose to denote a considerable spasm, and loss of tone, in the extreme vessels on the surface of the body.

5thly, The buboes or carbuncles, which denote an acrimony prevailing in the fluids. And,

*Lastly*, The petechiæ, hæmorrhagies, and colliquative diarrhœa, which denote a putrescent tendency prevailing to a great degree in the mass of blood.

668. From the consideration of all these symptoms, it appears, that the plague is especially distinguished by a specific contagion, often suddenly producing the most considerable symptoms of debility in the nervous system or moving powers, as well as of a general putrescency in the fluids; and it is from the consideration of these circumstances as the proximate cause, that I think both the prevention and cure of the plague must be directed.

669. If this disease should revisit the northern parts of Europe, it is probable, that, at the time, there will be no physician then alive, who, at the first appearance of the disease, can be guided by his former experience, but must be instructed by his study of the writers on this subject, and by analogy. It is, therefore, I hope allowable for

me, upon the same grounds, to offer here my opinion with respect to both the prevention and cure of this disease.

This paragraph was written before I had any notice of the plague of Moscow, anno 1771; but I think it will still apply to the case of Great Britain, and of many other northern states.

## SECT. II.

### *Of the prevention of the Plague.*

670. With respect to the prevention: as we are firmly persuaded that the disease never arises in the northern parts of Europe, but in consequence of its being imported from some other country; so the first measure necessary, is the magistrate's taking care to prevent the importation; and this may generally be done by due attention to bills of health, and to the proper performance of quarantains.

671. With respect to the latter, we are persuaded, that the quarantain of persons may safely be much less than forty days; and, if this were allowed, the execution of the quarantain would be more exact and certain, as the temptation to break it would be in a great measure removed.

672. With respect to the quarantain of goods,

it cannot be perfect, unless the suspected goods be unpacked and duly ventilated, as well as the other means employed for correcting the infection they may carry; and, if all this were properly done, it is probable that the time commonly prescribed for the quarantain of goods might also be shortened.

673. A second measure, in the way of prevention, becomes requisite, when an infection has reached and prevailed in any place, to prevent that infection from spreading into other places. This can be done only by preventing the inhabitants, or the goods of any infected place, from going out of it, till they have undergone a proper quarantain.

674. The third measure for prevention, to be employed with great care, is to hinder the infection from spreading among the inhabitants of the place in which it has arisen. The measures necessary for this, are to be directed by the doctrine laid down in 82; and from that doctrine, we infer, that all persons who can avoid any near communication with infected persons or goods, may escape the infection.

675. For avoiding such communication, a great deal may be done by the magistrate; 1, By allowing as many of the inhabitants as are free from the infection, and not necessary to the service of the place, to go out of it; 2, By prohibiting all as-

semblies, or unnecessary intercourse of the people; 3, By taking care that necessary communications be performed without contact; 4, By making such arrangements and provisions, as may render it easy for the families remaining, to shut themselves up in their own houses; 5, By allowing persons to quit houses in which an infection appears, upon condition that they go into lazarettoes; 6, By ventilating and purifying, or destroying, at the public expence, all infected goods; Lastly, By avoiding hospitals, and providing separate apartments for infected persons.

The execution of these measures will require great authority, and much vigilance and attention, on the part of the magistrate; but it is not our province to enter into any detail on the subject of the public police.

676. The fourth and last part of the business of prevention, respects the conduct of persons necessarily remaining in infected places, especially of those obliged to have some communication with persons infected.

677. Of those obliged to remain in infected places, but not obliged to have any near communication with the sick, they may be preserved from the contagion by avoiding all near communication with other persons, or their goods; and it is probable, that a small distance will answer the pur-

pose, if, at the same time, there be no stream of air to carry the effluvia of persons, or goods, to some distance.

678. For those who are necessarily obliged to have a near communication with the sick, it is proper to let them know, that some of the most powerful contagions do not operate, but when the bodies of men exposed to the contagion are in certain circumstances which render them more liable to be affected by it, or when certain causes concur to excite the power of it; and therefore, by avoiding these circumstances and causes, they may often escape infection.

679. The bodies of men are especially liable to be affected by contagions, when they are anywise considerably weakened by want of food, and even by a scanty diet, or one of little nourishment; by intemperance in drinking, which, when the stupor of intoxication is over, leaves the body in a weakened state; by excess in venery; by great fatigue; or by any considerable evacuation.

680. The causes which, concurring with contagion, render it more certainly active, are cold, fear, and full living.

The several means, therefore, of avoiding or guarding against the action of cold (94 to 96) are to be carefully studied.

681. Against fear the mind is to be fortified as well as possible, by inspiring a favourable idea of the power of preservative means; by destroying the opinion of the incurable nature of the disease; by occupying men's minds with business or labour; and by avoiding all objects of fear, as funerals, passing bells, and any notice of the death of particular friends.

682. A full diet of animal food increases the irritability of the body, and favours the operation of contagion; and indigestion, whether from the quantity or quality of food, has the same effect.

683. Besides giving attention to obviate the several circumstances (610, 679, to 682), which favour the operation of contagion, it is probable that some means may be employed for strengthening the bodies of men, and thereby enabling them to resist contagion.

For this purpose it is probable, that the moderate use of wine, or of spiritous liquors, may have a good effect.

It is probable also, that exercise, when it can be employed, if so moderate as to be neither heating nor fatiguing to the body, may be employed with advantage.

Persons who have tried cold bathing, and commonly feel invigorating effects from it, if they are anywise secure against having already received infection, may possibly be enabled to resist it by the use of the cold bath.

It is probable, that some medicines also may be useful in enabling men to resist infection: but amongst these I can hardly admit the numerous alexipharmics formerly proposed; or, at least, very few of them, and those only of tonic power. Amongst these last we reckon the Peruvian bark; and it is perhaps the most effectual. If any thing is to be expected from antiseptics, I think camphire, whether internally or externally employed, is one of the most promising.

Every person is to be indulged in the use of any means of preservation of which he has conceived a good opinion, whether it be a charm or a medicine, if the latter be not directly hurtful.

Whether issues be useful in preserving from, or in moderating the effects of contagion, I cannot determine from the observations I have yet read.

684. As neither the atmosphere in general, nor any considerable portion of it, is tainted or impregnated with the matter of contagions; so the lighting of fires over a great part of the infected city, or other general fumigations in the open air, are of no use for preventing the disease, and may perhaps be hurtful.

685. It would probably contribute much to check the progress of infection, if the poor were

enjoined to make a frequent change of clothing, and were suitably provided for that purpose; and if they were, at the same time, induced to make a frequent ventilation of their houses and furniture.

## SECT. III.

### *Of the cure of the Plague.*

686. In the cure of the plague, the indications are the same as those of fever in general (126); but here they are not all equally necessary and important.

687. The measures for moderating the violence of reaction, which operate by diminishing the action of the heart and arteries (128), have seldom any place here, excepting so far as the antiphlogistic regimen is generally proper. Some physicians, indeed, have recommended bleeding; and there may occur cases in which bleeding may be useful; but, for the most part, it is unnecessary, and in many cases it might be very hurtful.

Purging has also been recommended: and, in some degree, it may be useful in drawing off the bile, or other putrescent matters frequently present in the intestines; but a large evacuation this way may certainly be hurtful.

688. The moderating the violence of reaction,

so far as it can be done by taking off the spasm of the extreme vessels (151) is a measure of the utmost necessity in the cure of the plague, and the whole of the means (152 to 200) suited to this indication are extremely proper.

689. The giving an emetic at the very first approach of the disease, would probably be of great service; and it is likely, that at some other periods of the disease emetics might be useful, both by evacuating bile abundant in the alimentary canal, and by taking off the spasm of the extreme vessels.

690. From some principles with respect to fever in general, and with respect to the plague in particular, I am of opinion, that, after the exhibition of the first vomit, the body should be disposed to sweat; which ought to be raised to a moderate degree only, but continued for at least twenty-four hours, or longer if the patient bear it easily.

691. The sweating should be excited and conducted agreeably to the rules laid down in 168. It is to be promoted by the plentiful use of diluents, rendered more grateful by vegetable acids, or more powerful by being impregnated with some portion of neutral salts.

692. To support the patient under the continuance of the sweat, a little weak broth, acidulated

with juice of lemons, may be given frequently; and sometimes a little wine, if the heat of the body be not considerable.

693. If sudorific medicines are judged to be necessary, opiates are the most effectual and safe; but they should not be combined with aromatics; and probably may be more effectual, if joined with a portion of emetics, and of neutral salts.

694. If, notwithstanding the use of emetics and sudorifics, the disease should still continue, the cure must depend upon the employment of means for obviating debility and putrescency; and, for this purpose, the various remedies proposed above (from 201 to 227) may all be administered, but of those the chief are especially the tonics; and cold drink and the Peruvian bark.

695. In the cure of the plague, some attention is due to the management of buboes and carbuncles: but we do not touch this, as it belongs to the province of surgery.

## CHAP. VI.

### OF ERYSIPELAS, OR ST. ANTHONY'S FIRE.

696. In 274, I mentioned the distinction which I proposed to make between the diseases to be named the Erythema and the Erysipelas; and from thence it will appear, that Erysipelas, as an Erythema following fever, may have its place here.

697. I suppose the erysipelas to depend on a matter generated within the body, and which, analogous to the other cases of exanthemata, is, in consequence of fever, thrown out upon the surface of the body. I own it may be difficult to apply this to every particular case of erysipelas: but I take the case in which it is generally supposed to apply, that of the erysipelas of the face; which I shall therefore consider here.

698. The erysipelas of the face comes on with a cold shivering, and other symptoms of pyrexia. The hot stage of this is frequently attended with a confusion of the head, and some degree of delirium; and almost always with drowsiness, or perhaps coma. The pulse is always frequent, and commonly full and hard.

699. When these symptoms have continued for one, two, or at most three days, there appears, on some part of the face, a redness, such as that described in 275, as the appearance of Erythema. This redness, at first, is of no great extent; but gradually spreads from the part it first occupied to the other parts of the face, commonly till it has affected the whole; and frequently from the face it spreads over the hairy scalp, or descends on some part of the neck. As the redness spreads, it commonly disappears, or at least decreases, in the parts it had before occupied. All the parts upon which the redness appears are, at the same time, affected with some swelling, which continues for some time after the redness has abated. The whole face becomes considerably turgid; and the eyelids are often so much swelled, as entirely to shut up the eyes.

700. When the redness and swelling have proceeded for some time, there commonly arise, sooner or later, blisters of a larger or smaller size, on several parts of the face. These contain a thin yellowish or almost colourless liquor, which sooner or later runs out. The surface of the skin, in the blistered places, sometimes becomes livid and blackish: but this livor seldom goes deeper than the surface, or discovers any degree of gangrene affecting the skin. On the parts of the surface not affected with blisters, the cuticle suffers to-

wards the end of the disease, a considerable desquamation.

Sometimes the tumour of the eye-lids ends in a suppuration.

701. The inflammation coming upon the face does not produce any remission of the fever, which had before prevailed; and sometimes the fever increases with the increasing and spreading inflammation.

702. The inflammation usually continues for eight or ten days; and, for the same time, the fever and symptoms attending it also continue.

703. In the progress of the inflammation, the delirium and coma attending it sometimes go on increasing, and the patient dies apoplectic on the seventh, ninth, or eleventh day of the disease. In such cases, it has been commonly supposed that the disease is translated from the external to the internal parts. But I have not seen any instance in which it did not appear to me, that the affection of the brain was merely a communication of the external affection, as this continued increasing at the same time with the internal.

704. When the fatal event does not take place, the inflammation, after having affected a part, commonly the whole of the face, and perhaps the

other external parts of the head, ceases. With the inflammation, the fever also ceases; and, without any evident crisis, the patient returns to his ordinary state of health.

705. This disease is not commonly contagious; but as it may arise from an acrid matter externally applied, so it is possible that the disease may sometimes be communicated from one person to another.

Persons who have once laboured under this disease are liable to returns of it.

706. The event of this disease may be foreseen from the state of the symptoms which denote more or less affection of the brain. If neither delirium nor coma come on, the disease is seldom attended with any danger; but when these symptoms appear early in the disease, and are in a considerable degree, the utmost danger is to be apprehended.

707. As this disease often arises in the part, at the same time with the coming on of the pyrexia; as I have known it, with all its symptoms, arise from an acrimony applied to the part; as it is commonly attended with a full, and frequently a hard pulse; as the blood drawn in this disease shews the same crust upon its surface, that appears in the phlegmasiæ; and, lastly, as the swelling of the eye-lids, in this disease, frequently ends in a suppuration; so, from these considerations, it seems

doubtful if this disease be properly, in Nosology, separated from the Phlegmasiæ. At any rate, I take the disease I have described to be what physicians have named the Erysipelas Phlegmonodes, and that it partakes a great deal of the nature of the Plegmasiæ.

708. Upon this conclusion, the Erysipelas of the face is to be cured very much in the same manner as phlegmonic inflammations, by blood-letting, cooling purgatives, and by employing every part of the antiphlogistic regimen; and our experience has confirmed the fitness of this method of cure.

709. The evacuations of blood-letting and purging, are to be employed more or less according to the urgency of symptoms, particularly those of the pyrexia, and of those which mark an affection of the brain. As the pyrexi acontinues, and often increases with the inflammation of the face; so the evacuations mentioned may be employed at any time in the course of the disease.

710. In this, as in other diseases of the head, it is proper to put the patient, as often as he can easily bear it, into somewhat of an erect posture.

711. As in this disease there is always an external affection, and as in many instances there is no

other; so various external applications to the part affected have been proposed; but almost all of them are of a doubtful effect. The narcotic, refrigerant, and astringent applications, are suspected of disposing to gangrene; spiritous applications seem to increase the inflammation, and all oily or watery applications seem to occasion its spreading. The application that seems most safe, and which is now most commonly employed, is that of a dry meally powder frequently sprinkled upon the inflamed parts.

712. An Erysipelas Phlegmonodes frequently appears on other parts of the body beside the face; and such other erysipelatous inflammations frequently end in suppuration. These cases are seldom dangerous. At coming on, they are sometimes attended with drowsiness, and even with some delirium; but this rarely happens; and these symptoms do not continue after the inflammation is formed. I have never seen an instance of the translation of this inflammation from the limbs to an internal part; and though these inflammations of the limbs be attended with pyrexia, they seldom require the same evacuations as the erysipelas of the face. At first they are to be treated by dry meally applications only; and all humid applications, as fomentations, or poultices, are not to be applied, till, by the continuance of the disease, by

he increase of swelling, or by a throbbing felt in he part, it appears that the disease is proceeding o suppuration.

713. We have hitherto considered erysipelas as n a great measure of a phlegmonic nature; and, greeably to that opinion, we have proposed our method of cure. But it is probable, that an erysipelas is sometimes attended with, or is a symptom of, a putrid fever; and, in such cases, the evacuations proposed above may be improper, and the use of the Peruvian bark may be necessary; but I cannot be explicit upon this subject, as such putrid cases have not come under my observation.

## CHAP. VII.

### OF THE MILIARY FEVER.

714. THIS disease is said to have been unknown to the ancients, and that it appeared, for the first time, in Saxony, about the middle of the last century. It is said to have spread from thence into all the other parts of Europe; and, since the period mentioned, to have appeared in many countries in which it had never appeared before.

715. From the time of its having been first par-

ticularly observed, it has been described and treated of by many different writers; and by all of them, till very lately, has been considered as a peculiar idiopathic disease.

It is said to have been constantly attended with peculiar symptoms. It comes on with a cold stage, which is often considerable. The hot stage, which succeeds, is attended with great anxiety, and frequent sighing. The heat of the body becomes great, and soon produces profuse sweating; preceded, however, by a sense of pricking, as of pin-points, in the skin; and the sweat is of a peculiarly rank and disagreeable odour, The eruption appears sooner or later in different persons, but at no determined period of the disease. It seldom or never appears on the face; but discovers itself first upon the neck and breast, and from thence often spreads over the whole body.

716. The eruption named Miliary is said to be of two kinds, the one named the Red, the other, the White Miliary. The former, which in English is strictly named a Rash, is commonly allowed to be a symptomatic affection; and as the latter is the only one that has any pretensions to be considered as an idiopathic disease, it is this alone that I shall more particularly describe and treat of in the present chapter.

717. What then is called the White Miliary

eruption, appears at first like the red, in very small red pimples, for the most part distinct, but sometimes clustered together. Their slight prominence is distinguished better by the finger than by the eye Soon after the appearance of this eruption, and at least on the second day, a small vesicle appears upon the top of each pimple. At first the vesicle is whey-coloured; but soon becomes white, and stands out like a little globule on the top of the pimple. In two or three days, these globules break, or are rubbed off; and are succeeded by small crusts, which soon after fall off in small scales. While one set of pimples takes this course, another set succeeds; so that the disease often continues upon the skin for many days together. Sometimes when one crop of this eruption has disappeared, another, after some interval, is produced. And it has been further observed, that in some persons there is such a tendency to this disease, that they have been affected with it several times in the course of their lives.

718. This disease is said to affect both sexes, and persons of all ages and constitutions: but it has been observed, at all times, to affect especially, and most frequently, lying-in women.

719. This disease is often accompanied with violent symptoms, and has frequently proved fatal. The symptoms attending it are, however, very va-

rious. They are, in one or other instance, all the several symptoms attending febrile diseases; but I cannot find that any symptom or concourse of symptoms are steadily the same in different persons, so as to furnish any specific character to the disease. When the disease is violent, the most common symptoms are phrenitic, comatose, and convulsive affections, which are also symptoms of all fevers treated by a very warm regimen.

720. While there is such a variety of symptoms appearing in this disease, it is not to be expected that any one particular method of cure can be proposed: and accordingly we find, in different writers, different methods and remedies prescribed; frequent disputes about the most proper; and those received and practised by some, opposed and rejected by others.

721. I have thus given an account of what I have found delivered by authors who have considered the white miliary fever as an idiopathic disease; but now, after having often observed the disease, I must say that I doubt much if it ever be such an idiopathic as has been supposed, and I suspect that there is much fallacy in what has been written on the subject.

722. It seems to me very improbable, that this should have been really a new disease when it was

first considered as such. There appear to me very clear traces of it in authors who wrote long before that period; and, though there were not, we know that the descriptions of the ancients were inaccurate and imperfect, particularly with respect to cutaneous affections; while we know also very well, that those affections which usually appeared as symptomatic only, were commonly neglected, or confounded together under a general appellation.

723. The antecedent symptoms of anxiety, sighing, and pricking of the skin, which have been spoken of as peculiar to this disease, are, however, common to many others; and, perhaps to all those in which sweatings are forced out by a warm regimen.

Of the symptoms said to be concomitant of this eruption, there are none which can be said to be constant and peculiar but that of sweating. This, indeed, always precedes and accompanies the eruption; and, while the miliary eruption attends many different diseases, it never, however, appears in any of these, but after sweating; and, in persons labouring under these diseases, it does not appear, if sweating be avoided. It is therefore probable, that the eruption is the effect of sweating; and that it is the produce of a matter not before prevailing in the mass of blood, but generated, under particular circumstances, in the skin itself. That it depends upon particular circumstances of the skin, appears further from hence, that the eruption seldom or never appears upon the face, although it affects the whole of the body besides; that it comes upon those places especially which are more closely covered; and that it can be brought out upon particular parts by external applications.

724. It is to be observed, that this eruptive disease differs from the other exanthemata in many circumstances; in its not being contagious, and therefore never epidemic; that the eruption appears at no determined period of the disease; that the eruption has no determined duration; that successive eruptions frequently appear in the course of the same fever; and that such eruptions frequently recur in the course of the same person's life. All these circumstances render it extremely probable, that, in the miliary fever, the morbific matter is not a subsisting contagion communicated to the blood, and thence, in consequence of fever and assimilation, thrown out upon the surface of the body; but a matter occasionally produced in the skin itself by sweating.

725. This conclusion is further rendered probable from hence, that, while the miliary eruption has no peculiar symptoms, or concourse of symptoms, belonging to it; yet, upon occasion, it accompanies almost all febrile diseases, whether in-

flammatory or putrid, if these happen to be attended with sweating; and from thence it may be presumed, that the miliary eruption is a symptomatic affection only, produced in the manner we have said.

726. But, as this symptomatic affection does not always accompany every instance of sweating, it may be proper to inquire, what are the circumstances which especially determine this eruption to appear? To this, however, I can give no full and proper answer. I cannot say that there is any one circumstance which in all cases gives occasion to this eruption; nor can I say what different causes may, in different cases, give occasion to it. There is only one observation I can offer to the purpose of this inquiry; and it is, that, of the persons sweating under febrile diseases, those are especially liable to the miliary eruption, who have been previously weakened by large evacuations, particularly of blood. This will explain why it happens to lying-in women more frequently than to any other persons; and to confirm this explanation, I have remarked, that the eruption happened to women not in childbed, but who had been much subjected to a frequent and copious menstruation, and to an almost constant fluor albus. I have also had occasion to observe it happened to men in fevers, after wounds from which they had suffered a great loss of blood.

Further, that this eruption is produced by a certain state of debility, will appear probable, from its often occurring in fevers of the putrid kind, which are always attended with great debility. It is true, that it also sometimes attends inflammatory diseases, when it cannot be accounted for in the same manner; but I believe it will be found to attend especially those inflammatory diseases in which the sweats have been long protracted, or frequently repeated, and which have thereby produced a debility, and perhaps a debilitating putrid diathesis.

727. It appears so clearly to me that this eruption is always a symptomatic and factitious affection, that I am persuaded it may be in most cases prevented merely by avoiding sweats. Spontaneous sweatings, in the beginning of diseases, are very rarely critical; all sweatings, not evidently critical, should be prevented; and the promoting them, by increasing external heat, is commonly very pernicious. Even critical sweats should hardly be encouraged by such means. If, therefore, spontaneous sweats arise, they are to be checked by the coolness of the chamber; by the lightness and looseness of the bed-clothes; by the persons laying out their hands and arms, and by their taking cold drink; and, by these precautions, I think I have frequently prevented miliary eruptions, which were otherwise likely to have appeared, particularly in lying-in women.

728. But it may happen, when these precautions have been neglected, or from other circumstances, that a miliary eruption does actually appear; and the question will then be put, how the case is to be treated? It is a question of consequence, because I believe that the matter here generated is often of a virulent kind; it is frequently the offspring of putrescency; and, when treated by increasing the external heat of the body, it seems to acquire a virulence which produces those symptoms mentioned in 719, and proves certainly fatal.

It has been an unhappy opinion with most physicians, that eruptive diseases were ready to be hurt by cold; and that it was, therefore, necessary, to cover up the body very closely, so as thereby to increase the external heat. We now know that this is a mistaken opinion; that increasing the external heat of the body is very generally mischievous; and that several eruptions not only admit, but require the application of cold air. We are now persuaded, that the practice which formerly prevailed, in the case of miliary eruptions, of covering up the body close, and both by external means and internal remedies, encouraging the sweatings which accompany this eruption, was highly pernicious, and commonly fatal. I am therefore of opinion, even when a miliary eruption has appeared, that in all cases where the sweating is not manifestly critical, we should employ all the several means of stopping it that are mentioned above; and I have sometimes had occasion to observe, that even the admission of cool air was safe and useful.

729. This is, in general, the treatment of miliary eruptions: but at the same time, the remedies suited to the primary disease are to be employed; and therefore, when the eruption happens to accompany inflammatory affections, and when the fulness and hardness of the pulse or other symptoms shew an inflammatory state present, the case is to be treated by blood-letting, purging, and other antiphlogistic remedies.

Upon the other hand, when the miliary eruption attends diseases in which debility and putrescency prevail, it will be proper to avoid all evacuations, and employ tonic and antiseptic remedies, particularly the Peruvian bark, cold drink, and cold air.

I shall conclude this subject with mentioning, that the venerable octogenarian practitioner, De Fischer, when treating of this subject, in laying down the indications of the cure, has given this as one of them: ' Excretionis periphericæ non primariam habere rationem.'

## CHAP. VIII.

### OF THE REMAINING EXANTHEMATA;—URTICARIA, PEMPHIGUS, AND APHTHA.

730. THE Nettle Rash is a name applied to two different diseases. The one is the chronic eruption described by Dr. Heberden in the Medical Transactions, vol. i, art. 17, which, as not being a febrile disorder, does not belong to this place. The other is the Urticaria of our Synopsis, which, as taken into every system of nosology as one of the Exanthemata Febrilia, is properly to be treated of here.

731. I have never observed this disease as contagious and epidemic: and the few sporadic cases of it which have occurred to me, have seldom taken the regular course described by authors. At the same time, as the accounts of different authors are not very uniform, and hardly consistent, I cannot enter further into the consideration of this subject; and I hope it is not very necessary, as on all hands it is agreed to be a mild disease, and such as seldom require the use of remedies. It is generally sufficient to observe an antiphlogistic regimen, and to keep the patient in a temperature that is neither hot nor cold.

732. The Pemphigus or Vesicular fever, is a rare and uncommon disease, and very few instances of it are recorded in the writings of physicians. As I have never had occasion to see it, it would be improper for me to treat of it; and I do not choose to repeat after others, while the disease has yet been little observed, and its character does not seem to be exactly ascertained. Vid. Acta Helvetica, vol. ii, p. 260, Synops. Nosolog. vol. ii, p. 149.

733. The Aphtha, or Thrush, is a disease better known; and, as it commonly appears in infants, it is so well understood, as not to need our treating of it here. As an idiopathic disease, affecting adults, I have not seen it in this country: but it seems to be more frequent in Holland; and therefore, for the study of it, I refer to Dr. Boerhaave, and his commentator Van Swieten, whose works are in every body's hands.

734. The Petechia has been, by all our Nosologists, enumerated amongst the exanthemata; but as, according to the opinion of most physicians, it is very justly held to be always a symptomatic affection only, I cannot give it a place here.

# BOOK IV.

# OF HÆMORRHAGIES.

## CHAP. I.

### OF HÆMORRHAGY IN GENERAL.

735. IN establishing a class or order of diseases under the title of *Hæmorrhagies*, nosologists have employed the single circumstance of an effusion of red blood, as the character of such a class or order. By this means they have associated diseases which in their nature are very different; but, in every methodical distribution, such arbitrary and unnatural associations should be avoided as much as possible. Further, by that management nosologists have suppressed or lost sight of an established and well-founded distinction of hæmorrhagies into active and passive.

736. It is my design to restore this distinction; and I shall therefore here, under the title of Hæmorrhagies, comprehend those only which have been commonly called Active, that is, those attended with some degree of pyrexia; which seem

always to depend upon an increased impetus of the blood in the vessels pouring it out, and which chiefly arise from an internal cause. In this I follow Dr. Hoffman, who joins the active hæmorrhagies with the febrile diseases; and have accordingly established these hæmorrhagies as an order in the class of Pyrexiæ. From this order I exclude all those effusions of red blood that are owing entirely to external violence; and all those which, though arising from internal causes, are, however, not attended with pyrexia, and which seem to be owing to a putrid fluidity of the blood, and to the weakness or to the erosion of the vessels, rather than to any increased impetus of the blood in them.

737. Before proceeding to treat of those proper hæmorrhagies which form an order in our Nosology, I shall treat of active hæmorrhagy in general; and indeed the several genera and species to be treated of particularly afterwards, have so many circumstances in common with one another, that the general considerations to be now offered, will prove both proper and useful.

## SECT. I.

### *Of the phenomena of Hæmorrhagy.*

738. The phenomena of hæmorrhagy are generally the following.

Hæmorrhagies happen especially in plethoric habits, and to persons of a sanguine temperament. They appear most commonly in the spring, or in the beginning of summer.

For some time, longer or shorter in different cases, before the blood flows, there are some symptoms of fulness and tension about the parts from whence the blood is to issue. In such parts as fall under our view, there are some redness, swelling, and sense of heat or of itching; and in the internal parts, from which blood is to flow, there is a sense of weight and heat; and, in both cases, various pains are often felt in the neighbouring parts.

739. When these symptoms have subsisted for some time, some degree of a cold stage of pyrexia comes on, and a hot stage is formed; during which the blood flows of a florid colour, in a greater or lesser quantity, and continues to flow for a longer or shorter time; but commonly, after some time, the effusion spontaneously ceases, and together with it the pyrexia also.

740. During the hot stage which precedes an hæmorrhagy, the pulse is frequent, quick, full and often hard; but, as the blood flows, the pulse becomes softer and less frequent.

741. In hæmorrhagies, blood drawn from a

vein, does, upon its concreting, commonly shew the gluten separated, or a crust formed, as in the cases of phlegmasiæ.

742. Hæmorrhagies, from internal causes, having once happened, are apt, after a certain interval, to return; in some cases very often, and frequently at stated periods.

743. These are, in general, the phenomena of hæmorrhagy; and if in some cases all of them be not exquisitely marked, or if perhaps some of them do not at all appear, it imports only, that, in different cases, the system is more or less generally affected; and that, in some cases, there are purely topical hæmorrhagies, as there are purely topical inflammations.

## SECT. II.

### *Of the proximate cause of Hæmorrhagy.*

744. The pathology of hæmorrhagy seems to be sufficiently obvious. Some inequality in the distribution of the blood occasions a congestion in particular parts of the sanguiferous system; that is, a greater quantity of blood is poured into certain vessels than their natural capacity is suited to receive. These vessels become, thereby, preternaturally distended; and this distention, proving a stimulus to them, excites their action to a greater

degree than usual, which pushing the blood with unusual force into the extremities of these vessels, opens them by anastomosis, or rupture; and, if these extremities be loosely situated on external surfaces, or on the internal surfaces of certain cavities that open outwardly, a quantity of blood flows out of the body.

745. This reasoning will, in some measure, explain the production of hæmorrhagy. But it appears to me, that, in most cases, there are some other circumstances that concur to produce it: for it is probable, that in consequence of congestion, a sense of resistance arises and excites the action of the vis medicatrix naturæ; the exertions of which are usually made by the formation of a cold stage of pyrexia, inducing a more vigorous action of the vessels; and the concurrence of this exertion more effectually opens the extremities, and occasions the flowing out of the blood.

746. What has been delivered in the two preceding paragraphs, seems to explain the whole phenomena of hæmorrhagy, except the circumstance of its frequent recurrence, which I apprehend may be explained in the following manner. The congestion and consequent irritation being taken off by the flowing of the blood; this, therefore, soon after, spontaneously ceases; but, at the same time, the internal causes which had before

produced the unequal distribution of the blood, commonly remain, and must now operate the more readily, as the overstretched and relaxed vessels of the part will more easily admit of a congestion of blood in them, and, consequently, produce the same series of phenomena as before.

747. This may sufficiently explain the ordinary return of hæmorrhagy: but there is still another circumstance, which, as commonly concurring, is to be taken notice of; and that is, the general plethoric state of the system, which renders every cause of unequal distribution of more considerable effect. Though hæmorrhagy may often depend upon the state of the vessels of a particular part being favourable to a congestion's being formed in them; yet, in order to that state's producing its effect, it is necessary that the whole system should be at least in its natural plethoric condition; and, if this should be in any degree increased beyond what is natural, it will still more certainly determine the effects of topical conformation to take place. The return of hæmorrhagy, therefore, will be more certainly occasioned, if the system becomes preternaturally plethoric; but hæmorrhagy has always a tendency to increase the plethoric state of the system, and consequently, to occasion its own return.

748. To shew that hæmorrhagy does contribute to produce or increase the plethoric state of the

system, it is only necessary to observe, that the quantity of serous fluids being given, the state of the excretions depends upon a certain balance between the force of the larger arteries propelling the blood, and the resistance of the excretories: but the force of the arteries depends upon their fulness and distention, chiefly given to them by the quantity of red globules and gluten, which are, for the greatest part, confined to the red arteries; and therefore, the *spoliation* made by an hæmorrhagy, being chiefly of red globules and gluten, the effusion of blood must leave the red arteries more empty and weak. In consequence of the weaker action of the red arteries, the excretions are in proportion diminished; and, therefore, the ingesta continuing the same, more fluids will be accumulated in the larger vessels. It is by this means that the loss of blood by hæmorrhagies, whether artificial or spontaneous, if within certain bounds, is commonly so soon recovered: but as the diminution of the excretions, from a less quantity of fluid being impelled into the excretories, gives occasions to these vessels to fall into a contracted state; so, if this shall continue long, these vessels will become more rigid, and will not yield to the same impelling force as before. Although the arteries, therefore, by new blood collected in them, shall have recovered their former fulness, tension, and force, yet this force will not be in balance with the resistance of the more rigid excretories, so as to restore the former state of excretion; and, consequently, a further accumulation will take place in the arteries, and an increase of their plethoric state be thereby induced. In this manner, we perceive more clearly, that hæmorrhagy, as producing a more plethoric state of the system, has a tendency to occasion its own recurrence with greater violence; and as the renewal and further accumulation of blood require a determinate time, so, in the several repetitions of hæmorrhagy, that time will be nearly the same; and therefore the returns of hæmorrhagy will be commonly at stated periods, as has been observed frequently to happen.

749. I have thus explained the nature of hæmorrhagy in general, as depending upon some inequality in the distribution of the blood, occasioning a congestion of it in particular parts of the sanguiferous system. It is indeed probable, that, in most persons, the several parts of the sanguiferous system are in balance with one another; and that the density, and consequently the resistance, in the several vessels, is in proportion to the quantity of blood which each should receive; from whence it frequently happens, that no inequality in the distribution of the blood takes place in the course of a long life. If, however, we consider, that the sanguiferous system is constantly in a plethoric state, that is, that the vessels are constantly distended beyond that size which they would be of,

if free from any distending force, we shall be satisfied that this state may be readily changed. For as, on the one hand, the vessels are elastic, so as to be under a constant tendency to contract upon the withdrawing of any part of the distending force; and, on the other hand, are not so rigid, but that, by an increase of the impetus of the blood in them, they may be more than ordinarily distended; so we can easily understand how, in most persons, causes of an increased contraction or distention may arise in one part or other of the system, or that an unequal distribution may take place; and how, in an exquisitely distended or plethoric system, a small inequality in the distribution of the blood may form those congestions which give occasion to hæmorrhagy.

750. In this manner I endeavour to explain how hæmorrhagy may be occasioned at any period of life, or in any part of the body: but hæmorrhagies happen in certain parts more frequently than in others, and at certain periods of life more readily than at others; and therefore, in delivering the general doctrine of hæmorrhagy, it may be required that I should explain those circumstances which produce the specialties mentioned; and I shall now attempt it.

751. The human body, from being of a small bulk at its first formation, grows afterwards to a

considerable size. This increase of bulk consists, in a great measure, in the increase of the quantity of fluids, and a proportional enlargement of the containing vessels. But, at the same time, the quantity of solid matter is also gradually increased; and, in whatever manner we may suppose this to be done, it is probable that the progress, in the whole of the growth of animal bodies, depends upon the extension of the arterial system; and such is the constitution of the sanguiferous system, that the motion of the blood in the arteries has a constant tendency to extend them in every dimension.

752. As the state of the animal solid is, at the first formation of the body, very lax and yielding; so the extension of the system proceeds, at first, very fast: but, as the extension gives occasion to the apposition of more matter to the solid parts, these are, in proportion to their extension, constantly acquiring a greater density, and therefore giving more resistance to their further extension and growth. Accordingly, we observe, that as the growth of the body advances, its increase in any given time becomes proportionally less and less, till at length it ceases altogether.

753. This is the general idea of the growth of the human body, till it attain the utmost bulk which it is capable of acquiring; but, it is to be

remarked, that this growth does not proceed equally in every part of the body, it being requisite for the economy of the system, that certain parts should be first evolved, and should also acquire their full bulk sooner than others. This appears particularly with respect to the head, the parts of which appear to be first evolved, and soonest to acquire their full size.

754. To favour this unequal growth, it is presumed, that the dimensions or the laxity of the vessels of the head, or that the direction of the force of the blood, are adapted to the purpose; and from what has been said in 752, it will also certainly follow, that as the vessels of the head grow fastest, and soonest acquire their full size, so they will soonest also acquire that density which will prevent their further extension. While, however, the force of the heart, and the quantity of the fluids, with respect to the whole system, remain the same, the distending and extending powers will be directed to such parts as have not yet acquired the same density and dimensions as those first evolved; and thus the distending and extending powers will proceed to operate till every part of the system, in respect of density and resistance, shall have been brought to be in balance with every other, and till the whole be in balance with the force of the heart, so that there can be no further growth in any particular part, unless

some preternatural circumstance shall happen to arise.

755. In this process of the growth of the body, as it seems in general to depend upon a certain balance between the force of the heart, or distending power, and the resistance of the solids; so it will appear, that, while the solids remain very lax and yielding, some occasional increase of the distending power may arise, without producing any very perceptible disorder in the system. But it will also appear, that, in proportion as the distending power and resistance of the solids come to be more nearly in exact balance with one another, so any increase of the distending power will more readily produce a rupture of vessels, which do not easily yield to extension.

756. From all this, it must follow, that the effects of any unusually plethoric state of the system, will be different according as this shall occur at different periods of the growth of the body. Accordingly, it is evident, that if the plethoric state arises while the head is yet growing, and while the determination of the blood is still more to the head than to the other parts, the increased quantity of the blood will be especially determined to the head; and as there also, at the same time, the balance between the distending and extending powers is most nearly adjusted, so the determina-

tion of the blood will most readily produce in that part a rupture of the vessels, or an hæmorrhagy. Hence it is, that hæmorrhagies of the nose so frequently happen in young persons; and in these more readily, as they approach nearer to their acmé, or full growth; or it may be said, perhaps more properly, as they approach nearer to the age of puberty, when, perhaps, in both sexes, but especially in the female, a new determination arises in the system.

757. The determination of a greater quantity of blood to the vessels of the head, might be supposed to occasion a rupture of vessels in other parts of the head, as well as in the nose: but such a rupture does not commonly happen; because in the nose, there is, for the purpose of sense, a considerable network of blood-vessels expanded on the external surface of the nostrils, and covered only with thin and weak teguments. From this circumstance it is, that upon any increased impetus of the blood in the vessels of the head, those of the nose are most easily broken; and the effusion from the nose taking place, it not only relieves the other extremities of the external carotid, to which the arteries of the nose chiefly belong, but relieves also, in a great measure, the system of the internal carotid. For, from the internal carotid, certain branches are sent to the nose, or spread out on its internal surface, and probably inosculated with the

extremities of the external carotid: so that, whichsoever of the extremities are broken, the *vis derivationis* of Haller will take place; the effusion will relieve the whole sanguiferous system of the head; and the same effusion will also commonly prevent an hæmorrhagy happening at the same time in any other part of the body.

758. From these principles, it will appear why hæmorrhagies of the nose, so frequent before the period of puberty, or of the acmé, seldom happen after these periods: and I must observe further, that although they should occur, they would not afford any objection to my doctrine, as such hæmorrhagies might be imputed to a peculiar laxity of the vessels of the nose, and perhaps to a habit acquired with respect to these vessels, while the balance of the system might be otherwise duly adjusted.

759. When the process of the growth of the body goes on regularly, and the balance of the system is properly adjusted to the gradual growth of the whole, as well as to the successive growth of the several parts, even a plethoric state does not produce any hæmorrhagy, or at least any after that of the nose: but if, while the plethoric state continues, any inequality shall also subsist in any of the parts of the system, congestions, hæmorrhagic or inflammatory, may be still readily formed.

760. In general, it may observed, that, when the several parts of the system of the aorta have attained their full growth, and are duly balanced with one another, if then any considerable degree of plethora remain or arise, the nicety of the balance will be between the systems of the aorta and pulmonary artery, or between the vessels of the lungs and those of all the rest of the body. And although the lesser capacity of the vessels of the lungs is commonly compensated by the greater velocity of the blood in them; yet, if this velocity be not always adjusted to the necessary compensation, it is probable that a plethoric state of the whole body will always be especially felt in the lungs; and, therefore, that an hæmorrhagy, as the effect of a general plethora, may be frequently occasioned in the lungs, even though there be no fault in their conformation.

761. In some cases, perhaps, an hæmorrhagy from the lungs, or an hæmoptysis, does arise from the general plethoric state of the body; but an hæmoptysis more frequently does, and may be expected to happen, from a faulty proportion between the capacity of the lungs and that of the rest of the body.

762. When such a disproportion takes place, it will be evident, that an hæmoptysis will especially happen about the time that the body is approach-

ing to its acmé; that is, when the system of the aorta has arrived at its utmost extension and resistance, and when, therefore, the plethoric state of the whole must especially affect the lungs.

763. Accordingly, it has been constantly observed, that the hæmoptysis especially occurs about the time of the body's arriving at its acmé; but I must remark also, that the hæmorrhagy may occur sooner or later, according as the balance between the vessels of the lungs, and those of the system of the aorta, happen to be more or less exactly adjusted to one another; and it may therefore often occur much later than the period mentioned, when that balance, though not quite even, is however not so ill adjusted, but that some other concurring causes are necessary to give it effect.

764. It was anciently remarked by Hippocrates, and has been confirmed by modern observation, that the hæmoptysis generally occurs in persons between the age of fifteen and that of five-and-thirty; that it may happen at any time between these two periods; but that it seldom happens before the former, or after the latter; and it may be proper here to inquire into the reason of these two limitations.

765. With respect to the first, the reason of it has been already explained in 762 and 763.

With respect to the second limitation, I expect that the reason of it will be understood from the following considerations.

It has been already observed, that the extension and growth of the body require the plethoric state of the arterial system; and nature has provided for this, partly by the constitution of the blood being such, that a great portion of it is unfit to pass into the exhalants and excretories; partly by giving a certain density and resistance to the several exhalants and excretories through which the fluids might pass out of the red arteries; and partly, but especially, by a resistance in the veins to the free passage of the blood into them from the arteries.

766. With respect to this last and chief circumstance, it appears from the experiments of Sir Clifton Wintringham, in his *Experimental Inquiry*, that the proportional density of the coats of the veins to that of the coats of the arteries, is greater in young than in old animals: from which it may be presumed, that the resistance to the passage of the blood from the arteries into the veins, is greater in young animals than in old; and, while this resistance continues, the plethoric state of the arteries must be constantly continued and supported. As however the density of the coats of the vessels, consisting chiefly of a cellular texture, is increased by pressure; so, in proportion as the coats of the arteries are more exposed to pressure

by distention than those of the veins, the former, in the progress of the growth of the body, must increase much more in density than the latter; and, therefore, the coats of the arteries, in respect of density and resistance, must come, in time, not only to be in balance with those of the veins, but to prevail over them; a fact which is sufficiently proved by the experiments of the above-mentioned ingenious author.

By these means, the proportional quantities of blood in the arteries and veins must change in the course of life. In younger animals, the quantity of blood in the arteries must be proportionally greater than in old ones; but by the increasing density of the arteries, the quantity of blood in them must be continually diminishing, and that in the veins be proportionally increasing, so as at length to be in a proportionally greater quantity than that in the arteries. When this change happens in the proportional quantities of the blood in the arteries and veins, it must be evident that the plethoric state of the arteries will be in a great measure taken off; and, therefore, that the arterial hæmorrhagy is no longer likely to happen; but that, if a general plethoric state afterwards take place in the system, it must especially appear in the veins.

767. The change I have mentioned to happen in the state of the arterial and venous systems, is pro-

perly supposed to take place in the human body about the age of thirty-five, when it is manifest that the vigour of the body, which depends so much upon the fulness and tension of the arterial system, no longer increases; and therefore it is, that the same age is the period, after which the arterial hæmorrhagy, hæmoptysis, hardly ever appears. It is true, there are instances of the hæmoptysis happening at a later period; but it is for the reasons given (758), which shew that an hæmorrhagy may happen at any period of life, from accidental causes forming congestions, independent of the state of the balance of the system at that particular period.

768. I have said (766), that if, after the age of thirty-five, a general and preternatural plethoric state occur, it must especially appear in the venous system; and I must now observe, that this venous plethora may also give occasion to hæmorrhagy.

769. If a plethoric state of the venous system take place, it is to be presumed, that it will especially and in the first place affect the system of the vena portarum, in which the motion of the venous blood is more slow than elsewhere; in which the motion of the blood is little assisted by external compression; and in which, from the want of valves in the veins that form the vena portarum, the motion of the blood is little assisted by the

compression that is applied; while, from the same want of valves in those veins, the blood is more ready to regurgitate in them. Whether any regurgitation of the blood can produce an action in the veins, and which inverted, or directed towards their extremities, can force these, and occasion hæmorrhagy, may perhaps be disputed: but it appears to me that an hæmorrhagy, produced by a plethoric state of the veins, may be explained in another and more probable manner. If the blood be accumulated in the veins, from any interruption of its proper course, that accumulation must resist the free passage of the blood from the arteries into the veins. This again must produce some congestion in the extremities of the red arteries, and therefore some increased action in them, which must be determined with more than usual force, both upon the extremities of the arteries, and upon the exhalants proceeding from them; and this force may occasion an effusion of blood, either by anastomosis or rupture.

770. In this manner I apprehend the hæmorrhoidal flux is to be explained, so far as it depends upon the state of the whole system. It appears most commonly to proceed from the extremities of the hæmorrhoidal vessels, which, being the most dependent and distant branches of those veins that form the vena portarum, are therefore the most readily affected by every accumulation of blood in

that system of veins, and consequently by any general plethora in the venous system.

771. It is here to be observed, that I have spoken of this hæmorrhagy as proceeding from the hæmorrhoidal vessels only, as indeed it most commonly does; but it will be readily understood, that the same accumulation and resistance to the venous blood may, from various causes, affect many of the extremities of the vena portarum, which lie very superficially upon the internal surface of the alimentary canal, and give occasion to what has been called the *Morbus Niger*, or *Melæna*.

772. Another part in which an unusually plethoric state of the veins may have particular effects, and occasion hæmorrhagy, is the head. In this, the venous system is of a peculiar conformation, and such as seems intended by nature to give there a slower motion to the venous blood. If, therefore, the plethoric state of the venous system in general, which seems to increase as life advances, should at length increase to a great degree, it may very readily affect the venous vessels of the head, and produce there such a resistance to the arterial blood, as to determine this to be poured out from the nose, or into the cavity of the cranium. The special effect of the latter effusion will be, to produce the disease termed Apoplexy; and which,

therefore, is properly named by Dr. Hoffman, *Hæmorrhagia Cerebri*, and the explanation of its cause, which I have now given, explains well why it happens especially to men of large heads and short necks, and to men in the decline of life, when the powers promoting the motion of the blood are much weakened.

773. I have thus attempted to give the history of the plethoric and hæmorrhagic states of the human body, as they occur at the different periods of life; and hope I have thereby explained, not only the nature of hæmorrhagy in general, but also of the particular hæmorrhagies which most commonly appear, and as they occur successively at the different periods of life.

## SECT. III.

### *Of the Remote Causes of Hæmorrhagy.*

774. In the explanation hitherto given, I have especially considered the predisposition to hæmorrhagy; but it is proper also, and even necessary, to take notice of the occasional causes, which not only concur with the predisponent, in exciting hæmorrhagy, but may also sometimes be the sole causes of it.

775. These occasional causes are,

1. External heat, which, by rarefying the blood, produces or increases the plethoric state of the body; and the same heat, as giving a stimulus to the whole system, must urge any particular determinations before established, still further, or may urge to excess any inequality, otherwise innocent; so that, in either way, external heat may immediately excite hæmorrhagies, to which there was a predisposition, or may form congestions where there were none before, and thereby occasion hæmorrhagy.

2. A considerable and sudden diminution of the weight of the atmosphere, which seems to occasion the same effects as heat, by producing also an expansion of the blood.

3. Whatever increases the force of the circulation, and thereby the velocity of the blood, may operate in the same manner as heat, in urging not only previous determinations with violence, but also in urging to excess inequalities, otherwise innocent. All violent exercise, therefore, and especially all violent efforts, which, not only by a larger and longer inspiration, but also by the simultaneous action of many muscles interrupting the free motion of the blood, impel it with unusual force into the extreme vessels more generally, and, according to the different postures of the body, and mode of the effort, into certain vessels more particularly.

Among the causes increasing the force of the circulation, anger and other violent active passions are to be reckoned.

4. The violent exercise of particular parts of the body. If these are already affected with congestions, or liable to them, such exercise may be considered as a stimulus applied to the vessels of that particular part. Thus, any violent exercise of respiration may excite hæmoptysis, or occasion its return.

5. The postures of the body increasing determinations, or ligatures occasioning accumulations of the blood in particular parts of the body.

6. A determination into certain vessels rendered habitual by the frequent repetition of hæmorrhagy from them.

7. Cold, externally applied, as changing the distribution of the blood, and determining it in greater quantity into the internal parts.

## SECT IV.

### *Of the Cure of Hæmorrhagy.*

776. Having thus considered the proximate and remote causes of hæmorrhagy in general, our next business is, to treat of the cure of the disease in the same manner.

In entering upon this subject, the first question which presents itself, is, whether the cure of hæmorrhagies ought to be attempted by art, or if they should be left to the conduct of nature?

777. The latter opinion was the favourite doctrine of the celebrated Dr. Sthall and his followers. They maintained, that the human body is much disposed to a plethoric-state; and, consequently, to many disorders which nature endeavours to obviate and relieve by exciting hæmorrhagy: that this, therefore, is often necessary to the balance and health of the system: that it is accordingly to be generally encouraged, sometimes solicited, and is not to be suppressed, unless when it goes to great excess, or happens in parts in which it may be dangerous.

778. Much of this doctrine may be admitted. The human body upon many occasions, becomes preternaturally plethoric: and the dangerous consequences which might from thence be apprehended, seem to be obviated by an hæmorrhagy taking place; and further, the necessity of hæmorrhagy often appears from hence, that the suppression of it seems to occasion many disorders.

All this seems to be just; but in the conclusion drawn from it, there is a fallacy.

779. It appears to me certain, that hæmorrhagy, either upon its first attack, or upon its after recurrence, is never necessary to the health of the

body, excepting upon the supposition, that the plethoric state which seems to require the evacuation, cannot be otherwise prevented or removed; and as I imagine it possible by other means to prevent or remove a plethoric state, so I do not think that hæmorrhagy is, in all cases, necessary. In general, I am of opinion, that hæmorrhagy is to be avoided:

1, Because it does not always happen in parts where it is safe;

2, Because often, while it does relieve a plethoric state, it may at the same time, induce a very dangerous disease;

3, Because it may often go to excess, and either endanger life, or induce a dangerous infirmity;

And, lastly, because it has a tendency to increase the plethoric state it was meant to relieve; to occasion its own recurrence, (721); and thereby to induce a habit, which, if left to the precarious and unequal operation of nature, may, from the frequent errors of this, be attended with much danger.

780. It is further to be considered, that hæmorrhagies do not always arise from the necessities of the system, but often proceed from incidental causes. It appears to me, that all hæmorrhagies of the latter kind may be immediately suppressed, and the repetition of them, as it induces a plethora, and a habit not otherwise necessary, may be prevented with great advantage.

781. Upon the whole of this subject, I conclude, that every preternatural hæmorrhagy, or in other words, every one except that of the menses in females, is to be avoided, and especially the returns of it prevented; and I therefore now proceed to mention, how hæmorrhagy, and its recurrences, may, and should be prevented.

782. From the principles delivered above, it will immediately appear, that the prevention, either of the first attacks, or of the returns of hæmorrhagy, will chiefly, and in the first place, depend upon the preventing, or removing, any considerable degree of a plethoric state which may happen to prevail in the body. It is true, that, where the hæmorrhagy depends upon the particular conformation of certain parts, rather than upon the general plethoric state of the whole, the measures for removing or preventing the latter may not always be sufficient for preventing hæmorrhagy; but at the same time it must be evident, that determinations, in consequence of the conformation of particular parts, will always be urged more or less, in proportion to the greater or less degree of the plethoric state of the whole system; and, therefore, that even in the cases depending upon particular conformation, the preventing or removing an unusually plethoric state, will always be a chief means of preventing hæmorrhagy. It is further to be attended to, that there may be several in-

equalities in the balance of the system, which may have little or no effect unless when the system becomes preternaturally plethoric; and, therefore, that, in all cases, the preventing or removing of the plethoric state of the system, will be a chief means of preventing the first attacks, or the returns of hæmorrhagy. It now, therefore, remains to explain, how the plethoric state of the system is to be prevented or removed.

783. The fluids of the human body are in continual waste by the excretions, but are commonly replaced by the aliments taken in: and if the quantity of aliments in any measure exceeds that of the excretions, an increase of the quantity of the fluids of the body, or, in other words, a plethoric state, must necessarily arise. This, to a certain degree, is requisite for the growth of the body; but, even then, if the proportion of the aliments to the excretions, be greater than is suited to the growth of the body, and more certainly still, if after the growth is completed, when an equality between the *ingesta* and the *excreta* should be established, the disproportion still continue, a preternaturally plethoric state must arise. In both cases, it is evident, that the plethora must be prevented or corrected by adjusting the ingesta and excreta to each other; which generally may be done, either by diminishing the ingesta, or by increasing the excreta. The former may be effected

by the management of diet, the latter by the management of exercise.

784. The ingesta may be diminished, either by giving aliment in less quantity than usual, or by giving aliments of a less nutritious quality, that is, aliments of a substance, which, under the same bulk and weight, contain less of a matter capable of being converted into animal fluids, and more of a matter ready to pass off by the excretions, and consequently less of a matter to be retained and accumulated in the vessels.

The choice of aliments suited to these purposes, must be left to be directed by the doctrines of the Materia Medica.

785. The increasing of the excreta, and thereby diminishing the plethoric state of the system, is to be obtained by increasing the exercise of the body; and generally for adjusting the balance between the ingesta and excreta, and thereby obviating the plethoric state, it is necessary that exercise, in a due measure, be very constantly employed.

786. The observing abstinence, and the employment of exercise, for obviating or removing the plethoric state of the body, were formerly considered pretty fully, when treating of the Gout, (*548* to *552*); so that the less is necessary to be

said here; and it is now only requisite to observe, that the same doubts, as in cases of the gout, do not occur here with regard to the safety of those measures, which, in a plethoric state of the body disposing to hæmorrhagy, are always admissible and proper. Here, however, it is to be observed, that some choice in the mode of exercise is necessary, and that it should be different according to the particular determinations which may happen to prevail in the system. In general, in the case of plethora disposing to hæmorrhagy, bodily exercise will always be hazardous, and gestation more commonly safe.

787. Artificial evacuations may be employed to diminish the plethoric state of the body; and when, at any time, it has become considerable, and immediately threatens a disease, these evacuations should be made to the quantity that the symptoms seem to require. But it is constantly to be attended to, that blood-lettings are improperly employed to prevent a plethora, as they have a tendency to increase it (721); and as they require to be often repeated, and are thereby apt to induce a habit which may be attended with much danger.

788. While a plethora, and thereby the predisposition to hæmorrhagy, is avoided, or removed, the other measures necessary for preventing the occurrence of this, are those for avoiding the re-

mote causes. These have been enumerated in 775; and the means of avoiding them, so far as within our power, are sufficiently obvious.

789. Having thus mentioned the means of preventing either the first attacks, or the recurrence of hæmorrhagy; I must next say how it is to be managed when it has actually come on.

790. When an hæmorrhagy has come on which appears to have arisen from a preternaturally plethoric state, or from some change in the balance of the sanguiferous system, no measures are to be immediately taken for suppressing it: as we may expect, that, when the quantity of blood necessary for the relief of the system is poured out, the effusion will spontaneously cease.

791. In many cases, however, it may be suspected, that the quantity of blood poured out, is not exactly in proportion to the necessities of the system, either for relieving a general plethora or a particular congestion, but that it is often to a greater quantity than these require. This we suppose to happen in consequence of an inflammatory diathesis prevailing, and of a febrile spasm being formed; and therefore it is in many cases proper, as well as for the most part safe, to moderate the evacuation, and, when it threatens to go to excess, to suppress it altogether.

792. An hæmorrhagy may be moderated by avoiding any irritation that might concur to increase it; so that every part of the antiphlogistic regimen is to be observed; in particular external heat, both as it rarifies the fluids, and stimulates the solids, is to be carefully avoided: and it is probable, that in all cases an hæmorrhagy may be safely moderated by cool air applied, and cold drink exhibited.

793. A second means for the same purpose, is, the use of refrigerant medicines, and particularly of acids and nitre.

794. A third means which has been frequently employed, is that of blood-letting. The propriety of this practice may be doubtful, as the quantity of blood poured out by the hæmorrhagy, may be supposed to answer the purpose of an evacuation in any other way: and I am ready to allow, that the practice has been often superfluous, and sometimes hurtful, by making a greater evacuation than was necessary or safe. At the same time, I apprehend it is not for the mere purpose of evacuating, that blood-letting is to be practised in the cure of hæmorrhagy; but that it is further necessary for taking off the inflammatory diathesis which prevails, and the febrile spasm that has been formed. Accordingly, in the case of hæmorrhagy, when the pulse is not only frequent,

but quick and full, and does not become softer or slower upon the flowing of the blood, and that the effusion is profuse, and threatens to continue so, it appears to me, that blood-letting may be necessary, and I have often found it useful. It seems probable also, that the particular circumstances of venesection may render it more powerful for taking off the tension and inflammatory irritation of the system, than any gradual flow from an artery.

795. That a spasm of the extreme vessels has a share in supporting hæmorrhagy, appears to me probable from hence, that blistering has been often found useful in moderating and suppressing the disease.

796. Do emetics and vomiting contribute to the cure of hæmorrhagy ?—See Dr. Bryan Robinson on the virtues and power of medicines.

797. When an hæmorrhagy is very profuse, and seems to endanger life, or even threaten to induce a dangerous infirmity, it is agreed on all hands, that it is to be immediately suppressed by every means in our power ; and, particularly, that, besides the means above mentioned for moderating the disease, astringents, internal or external, where the latter can be applied are to be employed for suppressing it.

798. The internal astringents are either vegetable or fossil.

The vegetable astringents are seldom very powerful in the cure of any hæmorrhagies, except those of the alimentary canal.

The fossil astringents are more powerful; but some choice amongst the different kinds may be proper.

The chalybeates, so frequently employed, do not appear to me to be very powerful.

The preparations of lead are certainly more so, but are otherwise of so pernicious a quality, that they should not be employed except in cases of the utmost danger. The Tinctura Saturnina, or Antiphthisica, as it has been called, appears to be of little efficacy; but whether from the small portion of lead which it contains, or from the state in which the lead is in it, I am uncertain.

The fossil astringent that appears to me the most powerful, and at the same time the most safe, is alum.

799. External astringents, when they can be applied, are more effectual than the internal. The choice of these is left to the surgeons.

800. The most powerful of all astringents appears to me to be cold, which may be employed, either by applying cold water to the surface of the body, or by throwing it into the internal parts.

801. For suppressing hæmorrhagies, many superstitious remedies and charms have been recommended, and pretended to have been employed with success. The seeming success of these, however, has been generally owing to the by-standers mistaking a spontaneous ceasing of the hæmorrhagy for the effect of the remedy. At the same time, I believe, that those remedies may have been sometimes useful, by impressing the mind with horror, awe, or dread.

802. Upon occasion of profuse hæmorrhagies, opiates have been employed with advantage; and, when the fulness and inflammatory diathesis of the system have been previously taken off by the hæmorrhagy itself, or by blood-letting, I think opiates may be employed with safety.

803. For restraining hæmorrhagy, ligatures have been applied upon the limbs, in the view of retarding the return of the venous blood from the extremities; but they appear to me to be of uncertain and ambiguous use.

804. In the case of profuse hæmorrhagies, no pains are to be taken to prevent a Deliquium Animi, or fainting, as the happening of this is often the most certain means of stopping the hæmorrhagy.

805. Having thus delivered the general doc-

trine of hæmorrhagy, I proceed to consider the particular cases of it. It may perhaps be remarked, that I have marked fewer of these than are commonly enumerated by the nosologists; but my reasons for differing from these authors, must be left to a nosological discussion, to be entered into elsewhere more properly than here.

## CHAP. II.

### OF THE EPISTAXIS OR HÆMORRHAGY OF THE NOSE.

806. The state of the vessels upon the internal surface of the nose, being such as already mentioned (757), renders an hæmorrhagy from that more frequent than from any other part of the body.

807. The blood commonly flows from one nostril only, and probably because an hæmorrhagy from one vessel relieves the congestion in all the neighbouring vessels.

The blood flowing from both nostrils at the same time, shews commonly a more considerable disease.

808. This hæmorrhagy happens to persons of every constitution and temperament, but most fre-

quently to those of a plethoric habit and sanguine temperament. It happens to both sexes, but most frequently to the male.

809. This hæmorrhagy may occur at any time of life; but most commonly happens to young persons, owing to the state of the balance of the system peculiar to that age, as mentioned in 756.

810. Although generally it happens to persons before they have arrived at their full growth, and more rarely afterwards; yet sometimes it happens to persons after their acmé, and during the state of manhood: and it must then be imputed to an unusually plethoric state of the system; to an habitual determination of the blood to the vessels of the nose; or to the particular weakness of these.

811. In all these cases, the disease may be considered as an hæmorrhagy purely arterial, and depending upon an arterial plethora; but it sometimes occurs in the decline of life, when probably it depends upon and may be considered as a mark of a venous plethora of the vessels of the head. See 772.

812. This hæmorthagy happens also at any period of life, in certain febrile diseases, which are altogether or partly of an inflammatory nature,

and which shew a particular determination of the blood to the vessels of the head. These diseases often admit of a solution by this hæmorrhagy, when it may be properly termed *critical.*

813. The disease sometimes comes on without any previous symptoms; particularly, when some external violence has a share in producing it. But, when it proceeds entirely from an internal cause, it is commonly preceded by headachs, redness of the eyes, a florid colour of the face, an unusual pulsation in the temples, a sense of fulness about the nose, and an itching of the nostrils. A bound belly, pale urine, coldness of the feet, and cold shivering over the whole body, are also sometimes among the symptoms that precede the disease.

814. From the weakness of the vessels of the nose, the blood often flows from them without any considerable effort of the whole system, and therefore without any observable febrile disorder; which, however, in many cases, is, in all its circumstances, very discernible.

815. An hæmorrhagy of the nose happening to young persons, is, and may generally be considered as a slight disease of little consequence, and hardly requiring any remedy. But, even in young persons, when it recurs very frequently, and is very copious, it will require particular attention,

as it is to be considered as a mark of arterial plethora; and, as frequently returning, it may increase the plethoric state; which, in a more advanced stage of life, may give the blood a determination to parts from which the hæmorrhagy would be more dangerous. All this will more particularly require attention, according as the marks of plethora, and of particular congestion, preceding the hæmorrhagy, are more considerable; and as the flowing of the blood is attended with a more considerable degree of febrile disorder.

816. When the epistaxis happens to persons after their acmé, returning frequently, and flowing copiously, it is always to be considered as a dangerous disease, and as more certainly threatening the consequences mentioned in the last paragraph.

817. When this hæmorrhagy happens in the decline of life, it may be considered as in itself very salutary: but, at the same time, it is to be considered as a mark of a very dangerous state of the system; that is, as a mark of a very strong tendency to a venous plethora in the vessels of the head: and I have accordingly observed it often followed by apoplexy, palsy, or such like diseases.

818. When an hæmorrhagy from the nose

happens in febrile diseases, as mentioned in 812, and is in pretty large quantity, it may be considered as critical and salutary; but it is very apt to be profuse, and even in this way dangerous.

It upon some occasions occurs during the eruptive fever of several exanthemata, and is in such cases sometimes salutary; but, if these exanthemata be accompanied with any putrid tendency, this hæmorrhagy, like artificial blood-lettings, may have very bad effects.

819. Having thus explained the several circumstances of epistaxis, I proceed to consider the management and cure of it. I use the expression of *management*, because it has been usually thought to require no cure, but that nature should be allowed to throw out blood in this way very frequently; and as often as it appears to arise from internal causes, that is, from a state of the system supposed to require such evacuation.

820. I am however of opinion, for the reasons given in 779, that this disease is very seldom to be left to the conduct of nature; and that in all cases it should be moderated by keeping the patient in cool air; by giving cold drink; by keeping the body and head erect; by avoiding any blowing of the nose, speaking, or other irritation: and, when the blood has flowed for some time, without shewing any tendency to cease, a profuse

bleeding is to be prevented by measures employed to stop it; such as pressing the nostril from which the blood flows, washing the face with cold water, or applying this to other parts of the body.

821. Even in the case of young persons, where the disease is least hazardous, and even in the first attacks, I judge such measures to be proper: but they will be still more proper, if the disease frequently recurs without any external violence; if the returns shall happen to persons of a habit disposed to be plethoric; and, more particularly, if the marks of a plethoric state appear in the precedent symptoms. (813).

822. Even in young persons, if the bleeding be very profuse and long continued, and more especially if the pulse become weak and the face pale, I apprehend it will be proper to suppress the hæmorrhagy by every means in our power. See 797, and following paragraphs.

823. Further, in the same case of young persons, when the returns of this hæmorrhagy become frequent, and especially with the marks of a plethoric habit, I think it necessary to employ such a regimen as may prevent a plethoric state, (783, 787). At the same time, care should be taken to avoid all circumstances which may determine the blood more fully to the vessels of the head, or

prevent its free return from them; and, by keeping an open belly, to make some derivation from them.

824. In adult persons, liable to frequent returns of the epistaxis, the whole of the measures proposed 823, are more certainly and freely to be employed. When, with the circumstances mentioned in 813, the tendency to a profuse hæmorrhagy appears, a bleeding at the arm may be proper, even in young persons; but, in the case of adults, it will be still more allowable, and even necessary.

825. In persons of any age liable to frequent returns of this hæmorrhagy, when the measures proposed in 817, *et seq.* shall have been neglected, or, from peculiar circumstances in the balance of the system, shall have proved ineffectual, and the symptoms threatening hæmorrhagy (838), shall appear, it will then be proper, by blood-letting, cooling purgatives, and every part of the antiphlogistic regimen, to prevent the hæmorrhagy, or at least to prevent its being profuse when it does happen.

826. In the circumstances just now mentioned 825, the measures proposed are proper, and even necessary; but it should at the same time be observed, that these are practised with much less

advantage than those pointed out in 824; because, though those suggested here may prevent the coming on of the hæmorrhagy for the present, they certainly however dispose to the return of that plethoric state which required their being used; and there can be no proper security against returns of the disease, but by pursuing the means proposed in 823.

827. When the hæmorrhagy of the nose happens to persons approaching to their full growth, and when its returns have been preceded by the symptoms 813, it may be supposed, that, if the returns can be prevented by the measures proposed in 825, these may be safely employed; as the plethoric state induced will be rendered safe, by the change which is soon to take place in the balance of the system. This, however, cannot be admitted; as the evacuations practised upon this plan will have all the consequences, which I have already observed may follow the recurrence of the hæmorrhagy itself.

828. When the hæmorrhagy of the nose shall be found to make its returns at nearly stated periods, the measures for preventing it (825) may be practised with greater certainty; and, upon every repetition of blood-letting, by diminishing the quantity taken away, its tendency to induce a plethora may be in some measure avoided. When,

indeed, the repetition of evacuations is truly unavoidable, the diminishing them upon every repetition is properly practised; but it is a practice of nice and precarious management, and should by no means be trusted to, so far as to supersede the measures proposed in 825, wherever these can be admitted.

829. When the hæmorrhagy of the nose happens in consequence of a venous plethora in the vessels of the head, as in 772, the flowing of the blood pretty largely may be allowed, especially when it happens after the suppression or ceasing of the menstrual or hæmorrhoidal flux. But though the flowing of the blood is, on its first occurring, to be allowed, there is nothing more proper than guarding against its returns. This is to be done, not only by the measures proposed in 783, *et seq.* but, as the effects of a plethoric state of the vessels of the head are very uncertain, so, upon any appearance of it, and especially upon any threatening of hæmorrhagy, the plethora is to be removed, and the hæmorrhagy to be obviated immediately by proper evacuations; as blood-letting, purging, and issues, or by restoring suppressed evacuations, where this can be done.

# CHAP. III.

## OF THE HÆMOPTYSIS, OR HÆMORRHAGY FROM THE LUNGS.

### SECT. I.

### *Of the Phenomena and Causes of Hæmoptysis.*

830. WHEN, after some affection of the breast, blood is thrown out from the mouth, and is brought out with more or less coughing, there can be no doubt that it comes from the lungs; and this generally ascertains the disease of which I am now to treat. But there are cases in which the source of the blood spit out is uncertain; and therefore, some other considerations, to be mentioned hereafter, are often necessary to ascertain the existence of an hæmoptysis.

831. The blood-vessels of the lungs are more numerous than thoſe of any other part of the body of the same bulk. These vessels, of the largest size, as they arise from the heart, are more immediately than in any other part, subdivided into vessels of the smallest size; and these small vessels spread out near to the internal surfaces of the

bronchial cavities, are situated in a loose cellular texture, and covered by a tender membrane only: so that, considering how readily and frequently these vessels are gorged with blood, we may understand why an hæmorrhagy from them is, next to that of the nose, the most frequent of any; and particularly, why any violent shock given to the whole body, so readily occasions an hæmoptysis.

832. An hæmoptysis may be occasioned by external violence at any period of life; and I have explained above (760) why, in adult persons, while the arterial plethora still prevails in the system, that is, from the age of sixteen to that of five-and-thirty, an hæmoptysis may at any time be produced, merely by a plethoric state of the lungs.

833. But it has been also observed above (761) that an hæmoptysis more frequently arises from a faulty proportion between the capacity of the vessels of the lungs and that of those of the rest of the body. Accordingly, it is often a hereditary disease, which implies a peculiar and faulty conformation. And the disease also happens especially to persons who discover the smaller capacity of their lungs, by the narrowness of their chest, and by the prominency of their shoulders; which last is a mark of their having been long liable to a difficult respiration.

834. With these circumstances also the disease happens especially to persons of a sanguine temperament; in whom, particularly, the arterial plethora prevails. It happens likewise to persons of a slender delicate make, of which a long neck is a mark*; to persons of much sensibility and irritability, and therefore of quick parts, whose bodies are generally of a delicate structure; to persons who have been formerly liable to frequent hæmorrhagies of the nose; to persons who have suffered a suppression of any hæmorrhagy they had formerly been liable to, the most frequent instance of which is in females who have suffered a suppression of their menstrual flux; and lastly, to persons who have suffered the amputation of any considerable limb.

835. In most of these cases (834) the disease happens especially to persons about the time of their coming to their full growth, or soon after it, and this for the reasons fully set forth above.

836. From all that has been said from 831 to 835, the predisponent cause of hæmoptysis will be sufficiently understood, and the disease may happen from the mere circumstance of the predisponent cause arising to a considerable degree. In the predisposed, however, it is often brought on by the concurrence of various occasional and exciting causes. One of these, and perhaps a fre-

quent one, is external heat; which, even when in no great degree, will bring on the disease in spring, and the beginning of summer, while the heat rarefies the blood more than it relaxes the solids, which had been before contracted by the cold of winter. Another exciting cause is a sudden diminution of the weight of the atmosphere, especially when concurring with any effort in bodily exercise. This effort, too, alone, may often, in the predisposed, be the exciting cause; and, more particularly, any violent exercise of respiration. In short, in the predisposed, any degree of external violence also may bring on the disease.

837. Occasioned by one or other of these causes (836) the disease comes on with a sense of weight and anxiety in the chest, some uneasiness in breathing, some pain of the breast or other parts of the thorax, and some sense of heat under the sternum; and very often, before the disease appears, a saltish taste is perceived in the mouth.

838. Immediately before the appearance of blood, a degree of irritation is felt at the top of the larynx. To relieve this, a hawking is made, which brings up a little blood, of a florid colour, and somewhat frothy. The irritation returns; and, in the same manner, more blood of a like kind is brought up, with some noise in the windpipe, as of air passing through a fluid.

839. This is commonly the manner in which the hæmoptysis begins; but sometimes at the very first the blood comes up by coughing, or at least somewhat of coughing accompanies the hawking just now mentioned.

840. The blood issuing is sometimes at first in very small quantity, and soon disappears altogether: but, in other cases, especially when it repeatedly occurs, it is in greater quantity, and frequently continues to appear at times for several days together. It is sometimes profuse; but rarely in such quantity as, either by its excess, or by its sudden suffocation, to prove immediately mortal. It commonly either ceases spontaneously, or is stopped by the remedies employed.

841. When blood is thrown out from the mouth, it is not always easy to determine from what internal part it proceeds; whether from the internal surface of the mouth itself, from the fauces, or adjoining cavities of the nose, from the stomach, or from the lungs. It is, however, very necessary to distinguish the different cases; and, in most instances, it may be done by attending to the following considerations.

842. When the blood spit out proceeds from some part of the internal surface of the mouth itself, it comes out without any hawking or cough-

ing: and generally, upon inspection, the particular source of it becomes evident.

843. When blood proceeds from the fauces, or adjoining cavities of the nose, it may be brought out by hawking, and sometimes by coughing, in the manner we have described in 837 and 839; so that, in this way, a doubt may arise concerning its real source. A patient often lays hold of these circumstances to please himself with the opinion of its coming from the fauces, and he may be allowed to do so: but a physician cannot readily be deceived, if he consider, that a bleeding from the fauces is more rare than one from the lungs; that the former seldom happens but to persons who have been before liable either to an hæmorrhagy of the nose, or to some evident cause of erosion; and, in most cases, by looking into the fauces, the distillation of the blood, if it comes from thence, will be perceived.

844. When blood proceeds from the lungs, the manner in which it is brought up will commonly shew from whence it comes: but, independent of that, there are many circumstances which may concur to point it out, such as the period of life, the habit of body, and other marks of a predisposition, (833, 835); and, together with these, the occasional causes (836) having been immediately before applied.

845. When vomiting accompanies the throwing out of blood from the mouth, as vomiting and coughing often mutually excite each other; so they may be frequently joined, and render it doubtful whether the blood thrown out proceeds from the lungs or from the stomach. We may however generally decide, by considering, that blood does not so frequently proceed from the stomach as from the lungs: that blood proceeding from the stomach commonly appears in greater quantity than when it proceeds from the lungs: that the blood proceeding from the lungs is usually of a florid colour, and mixed with a little frothy mucus only; whereas the blood from the stomach is commonly of a darker colour, more grumous, and mixed with the other contents of the stomach: that the coughing or vomiting, according as the one or the other first arises, in the cases in which they are afterwards joined, may sometimes point out the source of the blood: and, lastly, that much may be learned from the circumstances and symptoms which have preceded the hæmorrhagy.

Those which precede the hæmoptysis enumerated in 837, are most of them evident marks of an affection of the lungs. And, on the other hand, the hæmatemesis, or issuing of blood from the stomach, has also its peculiar symptoms and circumstances preceding it; as, for instance, some morbid affection of this organ, or at least some pain, anxiety, and sense of weight, referred distinctly to the region of the stomach. To all this may be added, that the vomiting of blood happens more frequently to females than to males; and to the former, in consequence of a suppression of their menstrual flux: and by attending to all these considerations (842, 845), the presence of the hæmoptysis may commonly be sufficiently ascertained.

## SECT. II.

### *Of the Cure of Hæmoptysis.*

846. This disease is sometimes attended with little danger; as, when it happens to females in consequence of a suppression of the menses; when without any marks of a predisposition, it arises from external violence; or when, from whatever cause arising, it leaves behind it no cough, dyspnœa, or other affection of the lungs. Even in such cases, however, a danger may arise from too large an wound being made in the vessels of the lungs; from a quantity of red blood being left to stagnate in the cavity of the bronchiæ; and particularly, from any determination of the blood made into the vessels of the lungs, which, by renewing the hæmorrhagy, may have dangerous consequences. In every instance therefore of hæmoptysis, the effusion is to be moderated by the several means mentioned, 792, to 795.

847. These measures are especially necessary when the hæmoptysis arises in consequence of pre-

disposition; and in all cases where there is the appearance of a large effusion, or where the hæmorrhagy frequently returns, the effusion is not only to be moderated, but to be entirely stopped, and the returns of it prevented by every means in our power. See 797, and following.

848. To stop an hæmoptysis, or prevent the returns of it, two medicines have been frequently employed; neither of which I can approve of. These are, chalybeates, and the Peruvian bark. As both of them contribute to increase the phlogistic diathesis of the system, they can hardly be safe in any case of active hæmorhagy, and I have frequently found them hurtful.

849. As the hæmoptysis which happens in consequence of predisposition, is always attended with a phlogistic diathesis; and, as the bad consequences of the disease are especially to be apprehended from the continuance of that diathesis; so this is to be industriously taken off by blood-letting, in greater or smaller quantity, and more or less frequently repeated, according as the symptoms shall direct. At the same time, cooling purgatives are to be employed, and every part of the antiphlogistic regimen is to be strictly enjoined. The refrigerants may also be administered; taking care, however, that the acids, and more especially the nitre, do not excite coughing.

850. From what was observed in 795, it will appear, that blistering upon the breast or back may be a remedy of hæmoptysis, when it is present; and that issues in the same places may be useful in preventing the recurrence of it when it has ceased.

851. The avoiding of motion is generally a proper part of the antiphlogistic regimen; and, in the hæmoptysis, nothing is more necessary than avoiding bodily exercise: but some kinds of gestation, as sailing, and travelling in an easy carriage on smooth roads, have often proved a remedy.

852. Such is the treatment I can propose for the hæmoptysis, considered merely as an hæmorrhagy: but when, in spite of all our precautions, it continues to recur, it is often followed by an ulceration of the lungs, and a phthisis pulmonalis. This, therefore, I must now proceed to consider; but, as it arises also from other causes besides the hæmoptysis, it must be treated of with a more general view.

# CHAP. IV.

## OF THE PHTHISIS PULMONALIS, OR CONSUMPTION OF THE LUNGS.

### SECT. I.

### *Of the Phænomena and Causes of the Phthisis Pulmonalis.*

853. The Phthisis Pulmonalis I would define to be, an expectoration of pus or purulent matter from the lungs, attended with a hectic fever.

As this is the principal species of phthisis, I shall frequently in this chapter employ the general term of Phthisis, though strictly meaning the phthisis pulmonalis.

854. I have met with some instances of an expectoration of purulent matter continuing for many years, accompanied with very few symptoms of hectic, and at least without any hectic exquisitely formed: but in none of these instances were the persons so entirely free from symptoms of hectic, as to form any exception to the general definition.

855. In every instance of an expectoration of pus, I presume there is an ulceration of the lungs.

The late Mr. de Haen is the only author that I know of who has advanced another opinion, and has supposed, that pus may be formed in the blood-vessels, and be from thence poured into the bronchiæ. Admitting his fact, I have attempted an explanation of the appearance of pus without ulceration in 349: but, after all, I cannot help suspecting the accuracy of his observations; must entirely reject his explanation of them; must however allow, that we still want facts to support the explanation I have offered; and doubt much if it will apply to any case of phthisis. For these reasons I still conclude, agreeably to the faith of all other dissections, and the opinions of all physicians, that the symptoms mentioned in our definition, depend always upon an ulceration formed in the lungs.

856. It has sometimes happened, that a catarrh was attended with an expectoration of a matter so much resembling pus, that physicians have been often uncertain whether it was mucus or pus, and therefore whether the disease was a catarrh or a phthisis. It is often of consequence to determine these questions; and it appears to me that it may be generally done, with sufficient certainty, from the following considerations, of which each particular is not always singly decisive, but when they are taken together can hardly deceive us.

1, From the colour of the matter; as mucus is naturally transparent, and pus always opaque. When mucus becomes opaque, as it sometimes does, it becomes white, yellow, or greenish; but the last-mentioned colour is hardly ever so remarkable in mucus as in pus.

2, From the consistence; as mucus is more viscid and coherent, and pus less so, and may be said to be more friable. When mucus is thrown into water, it is not readily diffused, but remains united in uniform and circular masses: but pus, in the same circumstances, though not readily diffused, does not remain so uniformly united, and by a little agitation, is broken into ragged fragments.

3, From the odour; which is seldom perceived in mucus, but frequently in pus. It has been proposed to try the odour of the matter expectorated, by throwing it upon live coals: but in such a trial both mucus and pus give out a disagreeable smell, and it is not easy to distinguish between them.

4, From the specific gravity compared with water; and, indeed, it is usual for the mucus of the lungs to swim on the surface of the water, and for pus to sink in it. But in this we may sometimes be deceived; as pus which has entangled a great deal of air may swim, and mucus that is free from air may sink.

5, From the mixture which is discernible in the matter brought up; for if a yellow or greenish matter appears surrounded with a quantity of transparent or less opaque and less coloured matter, the more strongly coloured matter may be generally considered as pus; as it is not easy to understand how one portion of the mucus of the lungs can be very considerably changed, while the rest of it is very little so, or remains in its ordinary state.

6, From the admixture of certain substances with the matter thrown out from the lungs. To this purpose we are informed by the experiments of the late Mr. Charles Darwin: (1.) That the vitriolic acid dissolves both mucus and pus, but most readily the former: that if water be added, to such a solution of mucus, this is separated, and either swims on the surface, or, divided into flocculi, is suspended in the liquor; whereas, when water is added to a like solution of pus, this falls to the bottom, or by agitation is diffused so as to exhibit an uniformly turbid liquor. (2.) That a solution of the caustic fixed alkali, after some time, dissolves mucus, and generally pus; and, if water be added to such solutions, the pus is precipitated, but the mucus is not. From such experiments it is supposed, that pus and mucus may be certainly distinguished from each other.

7, From the expectoration's being attended with a hectic fever. A catarrh, or expectoration of mucus, is often attended with fever; but never, so far as I have observed, with such a fever as I am presently to describe as a hectic. This, in my opinion, is the most certain mark of a purulent state in some part of the body; and if others have thought differently, I am persuaded that it has been owing to this, that, presuming upon the mortal nature of a confirmed or purulent phthisis, they have considered every case in which a recovery happened, as a catarrh only; but, that they may have been mistaken in this, shall be shewn hereafter.

857. Having thus considered the first part of the character of the phthisis pulmonalis as a mark of an ulceration of the lungs; and having just now said, that the other part of the character, that is, the hectic fever, is a mark or indication of the same thing; it is proper now to consider this here, as I had with that view omitted it before, (74).

858. A hectic fever has the form of a remittent, which has exacerbations twice every day. The first of these occurs about noon, sometimes a little sooner or later; and a slight remission of it happens about five afternoon. This last is soon succeeded by another exacerbation, gradually increasing till after midnight: but after two o'clock of the morning a remission takes place, which becomes more and more considerable as the morning advances. The exacerbations are frequently attended with some degree of cold shivering; or at least the patient is exceedingly sensible to any coolness of the air, seeks external heat, and often complains of a sense of cold, when, to the ther-

mometer, his skin is preternaturally warm. Of these exacerbations, that of the evening is always the most considerable.

859. It has commonly been given as a part of the character of a hectic fever, that an exacerbation of it commonly appears after the taking food: and it is true that dinner, which is taken at noon or after it, does seem to occasion some exacerbation. But this must not make us judge the mid-day exacerbation to be the effect of eating only; for I have often observed it come on an hour before noon, and often some hours before dinner; which, in this country at present, is not taken till some time after noon. It is indeed to be observed, that, in almost every person, the taking food occasions some degree of fever; but I am persuaded this would not appear so considerable in a hectic, were it not that an exacerbation of fever is present from another cause; and accordingly, the taking food in the morning has hardly any sensible effect.

860. I have thus described the general form of hectic fever; but many circumstances attending it are further to be taken notice of. The fever I have described does not commonly subsist long, till the evening exacerbations become attended with sweatings; which continue to recur, and to prove more and more profuse, through the whole course of the disease. Almost from the first ap-

pearance of the hectic, the urine is high-coloured, and deposites a copious branny red sediment, which hardly ever falls close to the bottom of the vessel. In the hectic, the appetite for food is generally less impaired than in any other kind of fever. The thirst is seldom considerable; the mouth is commonly moist; and, as the disease advances, the tongue becomes free from all fur; appears very clean; and, in the advanced stages of the disease, the tongue and fauces appear to be somewhat inflamed, and become more or less covered with aphthæ. As the disease advances, the red vessels of the adnata of the eye disappear, and the whole of the adnata becomes of a pearly white. The face is commonly pale; but, during the exacerbations, a florid red, and an almost circumscribed spot, appear on each cheek. For some time, in the course of a hectic, the belly is bound; but, in the advanced stages of it, a diarrhœa almost always comes on, and continues to recur frequently during the rest of the disease, alternating in some measure with the sweatings mentioned above. The disease is always attended with a debility, which gradually increases during the course of it. During the same course an emaciation takes place, and goes to a greater degree than in almost any other case. The falling off of the hairs, and the adunque form of the nails, are also symptoms of the want of nourishment. Towards the end of the disease, the feet are often affected with œdematous swellings. The exacerbations of the fever are seldom attended with any headach, and scarcely ever with delirium. The senses and judgment commonly remain entire to the very end of the disease; and the mind, for the most part, is confident and full of hope. Some days before death, a delirium comes on, and commonly continues to the end.

861. The hectic fever now described, 858,860, as accompanying a purulent state of the lungs, is perhaps the case in which it most frequently appears: but I have never seen it in any case, when there was not evidently, or when I had not ground to suppose, there was a permanent purulency or ulceration in some external or internal part. It was for this reason, that in 74 I concluded it to be a symptomatic fever only. Indeed, it appears to me to be always the effect of an acrimony absorbed from abscesses or ulcers, although it is not equally the effect of every sort of acrimony; for the scorbutic and cancerous kinds often subsist long in the body without producing a hectic. What is the precise state of the acrimony producing this, I cannot determine; but it seems to be chiefly that of a vitiated purulency.

862. However this may be, it appears, that the hectic's depending in general upon an acrimony, explains its peculiar circumstances. The febrile state seems to be chiefly an exacerbation of that

frequency of the pulse, which occurs twice every day to persons in health, and may be produced by acrimony alone. These exacerbations, indeed, do not happen without the proper circumstances of pyrexia; but the spasm of the extreme vessels in a hectic does not seem to be so considerable as in other fevers; and hence the state of sweat and urine which appears so early and so constantly in hectics. Upon the same supposition of an acrimony corrupting the fluids, and debilitating the moving powers, I think that most of the other symptoms may also be explained.

863. Having thus considered the characteristical symptoms and chief part of the proximate cause of phthisis pulmonalis, I proceed to observe, that an ulcer of the lungs, and its concomitant circumstance of hectic fever, may arise from different previous affections of the lungs; all of which however may, in my opinion, be referred to five heads; that is, 1, To an hæmoptysis; 2, To a suppuration of the lungs in consequence of pneumonia; 3, To catarrh; 4, To asthma; or, 5, To a tubercle. These several affections, as causes of ulcers, shall now be considered in the order mentioned.

864. It has been commonly supposed, that an hæmoptysis was naturally, and almost necessarily, followed by an ulcer of the lungs: but I will presume to say, that, in general, this is a mistake; for

there have been many instances of hæmoptysis occasioned by external violence, without being followed by any ulcer of the lungs; and there have also been many instances of hæmoptysis from an internal cause without any consequent ulceration. And this too has been the case, not only when the hæmoptysis happened to young persons, and recurred for several times, but when it has often recurred during the course of a long life. It is indeed easy to conceive, that a rupture of the vessels of the lungs, like that of the vessels of the nose, may be often healed, as the surgeons speak, by the first intention. It is probable, therefore, that it is an hæmoptysis in particular circumstances only, which is necessarily followed by an ulcer; but what these circumstances are, it is difficult to determine. It is possible, that merely the degree of rupture, or frequently repeated rupture preventing the wound from healing by the first intention, may occasion an ulcer; or it is possible that red blood effused, and not brought up entirely by coughing, may, by stagnating in the bronchiæ, become acrid, and erode the parts. These however are but suppositions, not supported by any clear evidence. And, if we consider, that those cases of hæmoptysis which follow the predisposition, (832, 835) are those especially which end in phthisis, we shall be led to suspect, that there are some other circumstances which concur here to determine the consequence of hæmoptysis, as I shall hereafter endeavour to shew.

865. Any supposition, however, which we can make with respect to the innocence of an hæmoptysis, must not supersede the measures proposed above for its cure; both because we cannot certainly foresee what may be the consequences of such an accident, and because the measures above suggested are safe; for, upon every supposition, it is a diathesis phlogistica that may urge on every bad consequence to be apprehended.

866. The second cause of an ulceration of the lungs to be considered, is a suppuration formed in consequence of pneumonia,

867. From the symptoms mentioned in 858, 859, it may with reason be concluded, that an abscess, or, as it is called, a *vomica*, is formed in some part of the pleura, and most frequently in that portion of it investing the lungs. Here purulent matter frequently remains for some time, as if inclosed in a cyst: but commonly it is not long before it comes to be either absorbed and transferred to some other part of the body; or that it breaks through into the cavity of the lungs, or into that of the thorax. In the latter case, it produces the disease called *empyema*; but it is only when the matter is poured into the cavity of the bronchiæ, that it properly constitutes the phthisis pulmonalis. In the case of empyema, the chief circumstances of a phthisis are indeed also present;

but I shall here consider that case only, in which the abscess of the lungs gives occasion to a purulent expectoration.

868. An abscess of the lungs, in consequence of pneumonia, is not always followed by a phthisis: for sometimes a hectic fever is not formed; the matter poured into the bronchiæ is a proper and benign pus, which is frequently coughed up very readily, and spit out: and, though this purulent expectoration should continue for some time, yet, if a hectic does not come on, the ulcer soon heals, and every morbid symptom disappears. This has happened so frequently, that we may conclude, that neither the access of the air, nor the constant motion of the lungs, will prevent an ulcer of these parts from healing, if the matter of it be well-conditioned. An abscess of the lungs, therefore, does not necessarily produce the phthisis pulmonalis; and if it be followed by such a disease, it must be in consequence of particular circumstances which corrupt the purulent matter produced, render it unsuitable to the healing of the ulcer, and at the same time make it afford an acrimony, which, being absorbed, produces a hectic and its consequences.

869. The corruption of the matter of such abscesses may be owing to several causes; as, 1, That the matter effused during the inflammation, had not been a pure serum fit to be converted into

a laudable pus, but had been united with other matters which prevented that, and gave a considerable acrimony to the whole: or, 2, That the matter effused, and converted into pus, either merely by a long stagnation in a vomica, or by its connection with an empyema, had been so corrupted, as to become unfit for the purpose of pus in the healing of the ulcer. These seem to be possible causes of the corruption of matter in abscesses, so as to make it the occasion of a phthisis in persons otherwise sound; but it is probable, that a pneumonic abscess does especially produce phthisis when it happens to persons previously disposed to that disease, and therefore only as it concurs with some other causes of it.

870. The third cause supposed to produce phthisis, is a catarrh; which, in many cases, seems, in length of time, to have the expectoration of mucus proper to it, gradually changed into an expectoration of pus; and at the same time, by the addition of a hectic fever, the disease, which was at first a pure catarrh, is converted into a phthisis. This supposition, however, is not easily to be admitted. The catarrh is properly an affection of the mucous glands of the trachea and bronchiæ, analogous to the coryza, and less violent kinds of cynanche tonsillaris, which very seldom terminate in suppuration. And although a catarrh should be disposed to such termination, yet the ulcer pro-

duced might readily heal up, as it does in the case of a cynanche tonsillaris; and therefore should not produce a phthisis.

871. Further, the catarrh, as purely the effect of cold, is generally a mild disease, as well as of short duration; and of the numerous instances of it, there are at most but very few cases which can be said to have ended in phthisis. In all those cases in which this seems to have happened, it is to me probable, that the persons affected were peculiarly predisposed to phthisis. And the beginning of phthisis so often resembles a catarrh, that the former may have been mistaken for the latter. Besides, to increase the fallacy, it often happens, that the application of cold, which is the most frequent cause of catarrh, is also frequently the exciting cause of the cough, which proves the beginning of phthisis.

872. It is to me therefore probable that a catarrh is very seldom the foundation of phthisis; but I would not positively assert, that it never is so; for it is possible, that the cases of a more violent catarrh may have joined with them a pneumonic affection, which may end in a suppuration; or it may happen, that a long continued catarrh, by the violent agitation of the lungs in coughing, will produce some of those tubercles which are presently to be mentioned as the most frequent cause of phthisis.

873. It must be particularly observed here, that nothing said in 872, should allow us to neglect any appearance of catarrh, as is too frequently done; for it may be either the beginning of a phthisis which is mistaken for a genuine catarrh, or that even as a catarrah continuing long, it may produce a phthisis, as in 872.

874. Many physicians have supposed an acrimony of the fluids eroding some of the vessels of the lungs, to be a frequent cause of ulceration and phthisis. But this appears to me to be a mere supposition: for in any of the instances of the production of phthisis which I have seen, there was no evidence of any acrimony of the blood capable of eroding the vessels. It is true, indeed, that in many cases an acrimony subsisting in some part of the fluids, is the cause of the disease; but it is at the same time probable, that this acrimony operates by producing tubercles, rather than by any direct erosion.

875. It has been mentioned in 863, that an asthma may be considered as one of the causes of phthisis; and by asthma I mean, that species of it which has been commonly named the Spasmodic. This disease frequently subsists very long without producing any other, and may have its own peculiar fatal termination, as shall be explained hereafter. But I have seen it frequently end in phthisis,

and in such cases I suppose it to operate in the manner above alleged of catarrh, that is, by producing tubercles, and their consequences, which shall be presently mentioned.

876. I come now to consider the fifth head of the causes of phthisis, and which I apprehend to be the most frequent of any. This I have said, in general, to be tubercles; by which term are meant, certain small tumours, which have the appearance of indurated glands. Dissections have frequently shewn such tubercles formed in the lungs; and although at first indolent, yet at length they become inflamed, and are thereby changed into little abscesses, or vomicæ, which breaking, and pouring their matter into the bronchiæ, give a purulent expectoration, and thus lay the foundation of phthisis.

877. Though the matter expectorated upon these occasions has the appearance of pus, it is seldom that of a laudable kind; and, as the ulcers do not readily heal, but are attended with a hectic fever, for the most part ending fatally, I presume that the matter of the ulcers is imbued with a peculiarly noxious acrimony, which prevents their healing, and produces a phthisis in all its circumstances, as mentioned above.

878. It is very probable, that the acrimony

which thus discovers itself in the ulcers, existed before, and produced the tubercles themselves; and it is to this acrimony that we must trace up the cause of the phthisis following these tubercles. This acrimony is probably, in different cases, of different kinds; and it will not be easy to determine its varieties: but to a certain length I shall attempt it.

879. In one case, and that too a very frequent one, of phthisis, it appears, that the noxious acrimony is of the same kind with that which prevails in the scrofula. This may be concluded from observing, that a phthisis, at its usual periods, frequently attacks persons born of scrofulous parents; that is, of parents who had been affected with scrofula in their younger years; that very often, when the phthisis appears, there occur at the same time some lymphatic tumours in the external parts; and very often I have found the tabes mesenterica, which is a scrofulous affection, joined with the phthisis pulmonalis. To all this I would add, that, even when no scrofulous affection has either manifestly preceded or accompanied a phthisis, this last however most commonly affects persons of a habit resembling the scrofulous; that is, persons of a sanguine, or of a sanguineo-melancholic temperament, who have very fine skins, rosy complexions, large veins, soft flesh, and thick upper lip: and further, that in such persons the phthisis

comes on in the same manner that it does in persons having tubercles, as shall be immediately explained.

880. Another species of acrimony producing tubercles of the lungs, and thereby phthisis, may be said to be the exanthematic. It is well known, that the small-pox sometimes, and more frequently the measles, lay the foundation of phthisis. It is probable also, that other exanthemata have the same effect; and from the phenomena of the disease, and the dissections of persons who have died of it, it is probable, that all the exanthemata may occasion a phthisis, by affording a matter which in the first place produces tubercles.

881. Another acrimony, which seems sometimes to produce phthisis, is the siphylitic; but whether such an acrimony produces phthisis in any other persons than the previously disposed, does not appear to me certain.

882. What other species of acrimony, such as from scurvy, from pus absorbed from other parts of the body, from suppressed eruptions, or from other sources, may also produce tubercles and phthisis, I cannot now decide, but must leave to be determined by those who have had experience of such cases.

883. There is one peculiar case of phthisis, which

from my own experience I can take notice of. This is the case of phthisis from a calcareous matter formed in the lungs, and coughed up, frequently with a little blood, sometimes with mucus only, and sometimes with pus. How this matter is generated, or in what precise part of the lungs it is seated, I acknowledge myself ignorant. In three cases of this kind which have occurred to me, there was at the same time no appearance of stony or earthy concretions in any other part of the body. In one of these cases, an exquisitely formed phthisis came on, and proved mortal: while in the other two, the symptoms of phthisis were never fully formed; and after some time, merely by a milk diet and avoiding irritation, the patients entirely recovered.

884. Another foundation for phthisis, analogous, as I judge, to that of tubercles, is that which occurs to certain artificers, whose employments keep them almost constantly exposed to dust; such as stone-cutters, millers, flax-dressers, and some others. I have not observed in this country many instances of phthisis which could be referred to this cause; but, from Ramazzini, Morgagni, and some other writers, we must conclude such cases to be more frequent in the southern parts of Europe.

885. Besides those now mentioned, there are

probably some other causes producing tubercles, which have not yet been ascertained by observation; and it is likely, that in the state of tubercles there is a variety not yet accounted for: but all this must be left to future observation and inquiry.

886. It has been frequently supposed by physicians, that the phthisis is a contagious disease; and I dare not assert that it never is such: but in many hundred instances of the disease which I have seen, there has been hardly one which to me could appear to have arisen from contagion. It is possible, that in warmer climates the effects of contagion may be more discernible.

After having said, that a phthisis arises from tubercles more frequently than from any other cause, and after having attempted to assign the variety of these, I now proceed to mention the peculiar circumstances and symptoms which usually accompany the coming on of the disease from tubercles.

887. A tuberculous and purulent state of the lungs has been observed in very young children, and in some others at several different periods before the age of puberty and full growth; but instances of this kind are rare: and the attack of phthisis, which we have reason to impute to tubercles, usually happens at the same period which I have assigned for the coming on of the hæmoptysis.

888. The phthisis from tubercles does also generally affect the same habits as the hæmoptysis, that is, persons of a slender make, of long necks, narrow chests, and prominent shoulders: but very frequently the persons liable to tubercles have less of the florid countenance, and of the other marks of an exquisitely sanguine temperament, than the persons liable to hæmoptysis.

889. This disease arising from tubercles, usually commences with a slight and short cough, which becomes habitual, is often little remarked by those affected, and sometimes so little as to be absolutely denied by them. At the same time their breathing becomes easily hurried by any bodily motion, their body grows leaner, and they become languid and indolent. This state sometimes continues for a year, or even for two years, without the persons making any complaint of it, excepting only that they are affected by cold more readily than usual, which frequently increases their cough, and produces some catarrh. This, again, however, is sometimes relieved; is supposed to have arisen from cold alone; and therefore gives no alarm either to the patient or his friends, nor leads them to take any precautions.

890. Upon one or other of these occasions of catching cold, as we commonly speak, the cough becomes more considerble; is particularly trouble-

some upon the patient's lying down at night, and in this state continues longer than is usual in the case of a simple catarrh. This is more especially apt to call for attention, if the increase and continuance of cough comes on during the summer season.

891. The cough which comes on, as in 889, is very often for a long time without any expectoration; but when, from repeatedly catching cold, it becomes more constant, it is then at the same time attended with some expectoration, which is most considerable in the mornings. The matter of this expectoration becomes by degrees more copious, more viscid, and more opaque; at length of a yellow or greenish colour, and of a purulent appearance. The whole of the matter, however, is not always at once entirely changed in this manner: but while one part of it retains the usual form of mucus, another suffers the changes now described.

892. When the cough increases, and continues very frequent through the night, and when the matter expectorated undergoes the changes I have mentioned, the breathing at the same time becomes more difficult, and the emaciation and weakness go on also increasing. In the female sex, as the disease advances, and sometimes early in its progress, the menses cease to flow; and this circum-

stance is to be considered as commonly the effect, although the sex themselves are ready to believe it the sole cause, of the disease.

893. When the cough comes on, as in 889, the pulse is often natural, and for some time after continues to be so, but the symptoms have seldom subsisted long before the pulse becomes frequent, and sometimes to a considerable degree, without much of the other symptoms of fever. At length, however, evening exacerbations become remarkable; and by degrees the fever assumes the exquisite form of hectic, as described in 858, 860.

894. It is seldom that the cough, expectoration, and fever, go on increasing, in the manner now described, without some pain being felt in some part of the thorax. It is usually and most frequently felt at first under the sternum, and that especially, or almost only, upon occasion of coughing; but very often, and that, too, early in the course of the disease, a pain is felt in one side, sometimes very constantly, and so as to prevent the person from lying easily upon that side; but at other times, the pain is felt only upon a full inspiration, or upon coughing. Even when no pain is felt, it generally happens, that phthisical persons cannot lie easily on some one of their sides, without having their difficulty of breathing increased, and their cough excited.

895. The phthisis begins, and sometimes proceeds to its fatal issue, in the manner described from 889, to 895, without any appearance of hæmoptysis. Such cases are indeed rare; but it is very common for the disease to advance far, and even to an evident purulency and hectic state, without any appearance of blood in the spitting: so that it may be affirmed, the disease is frequently not founded in hæmoptysis. At the same time, we must allow, not only that it sometimes begins with an hæmoptysis, as is said in 864 ; but further, that it seldom happens, that in the progress of the disease more or less of an hæmoptysis does not appear. Some degree of blood-spitting does indeed appear sometimes in the state mentioned (889, 893), but more commonly in the more advanced stages of the disease only, and particularly upon the first appearance of purulency. However this may be, it is seldom, in the phthisis from tubercles, that the hæmoptysis is considerable, or requires any remedies different from those which are otherwise necessary for the state of the tubercles.

896. I have now described a succession of symptoms which, in different cases, occupy more or less time. In this climate they very often take up some years, the symptoms appearing especially in the winter and spring, commonly becoming easier, and sometimes almost disappearing, during the summer: but returning again in winter, they at length,

after two or three years, prove fatal, towards the end of spring or beginning of summer.

897. In this disease, the prognosis is for the most part unfavourable. Of those affected with it, the greater number die; but there are also many of them who recover entirely, after having been in very unpromising circumstances. What are, however, the circumstances more certainly determining to a happy or to a fatal event, I have not yet been able to ascertain.

898. The following aphorisms are the result of my observations.

A phthisis pulmonalis from hæmoptysis, is more frequently recovered than one from tubercles.

An hæmoptysis not only is not always followed by a phthisis, as we have said above (864); but even when followed by an ulceration, the ulceration is sometimes attended with little of hectic, and frequently admits of being soon healed. Even when the hæmoptysis and ulceration have happened to be repeated, there are instances of persons recovering entirely after several such repetitions.

A phthisis from a suppuration in consequence of pneumonic inflammation, is that which most rarely occurs in this climate; and a phthisis does not always follow such suppuration, when the abscess formed soon breaks and discharges a laudable pus: but, if the abscess continue long shut up, and till after a considerable degree of hectic has been formed, a phthisis is then produced, equally dangerous as that from other causes.

A phthisis from tubercles has, I think, been recovered: but it is of all others the most dangerous; and, when arising from a hereditary taint, is almost certainly fatal.

The danger of a phthisis, from whatever cause it may have arisen, is most certainly to be judged of by the degree to which the hectic and its consequences have arrived. From a certain degree of emaciation, debility, profuſe sweating, and diarrhœa, no person recovers.

A mania coming on, has been found to remove all the symptoms, and sometimes has entirely cured the disease; but, in other cases, upon the going off of the mania, the phthisis has recurred, and proved fatal.

The pregnancy of women has often retarded the progress of a phthisis; but commonly it is only till after delivery, when the symptoms of phthisis return with violence, and soon prove fatal.

## SECT. II.

### *Of the Cure of Phthisis.*

899. From what has been just now said, it will readily appear, that the cure of the phthisis pulmonalis must be exceedingly difficult; and that even the utmost care and attention in the employment of remedies, have seldom succeeded. It may be doubtful whether this failure is to be imputed to the imperfection of our art, or to the absolutely incurable nature of the disease. I am extremely averse in any case to admit of the latter supposition, and can always readily allow of the former; but, in the meantime, must mention here, what has been attempted towards either curing or moderating the violence of this disease.

900. It must be obvious, that according to the different circumstances of this disease, the method of cure must be different. Our first attention should be employed in watching the approach of the disease, and preventing its proceeding to an incurable state.

In all persons of a phthisical habit, and especially in those born of phthisical parents, the slightest symptoms of the approach of phthisis, at the phthisical period of life, ought to be attended to,

901. When an hæmoptysis occurs, though it be not always followed with ulceration and phthisis, these however are always to be apprehended; and every precaution is to be taken against them. This is especially to be done, by employing every means of moderating the hæmorrhagy, and of preventing its return, directed in 892, *et seq.* and these precautions ought to be continued for several years after the occurrence of the hæmoptysis.

902. The phthisis which follows a suppuration from pneumonic inflammation, can only be prevented with certainty, by obtaining a resolution of such inflammation. What may be attempted towards the cure of an abscess and ulcer which have taken place, I shall speak of hereafter.

903. I have said, it is doubtful if a genuine catarrh ever produces a phthisis; but have allowed that it possibly may: and both upon this account, and upon account of the ambiguity which may arise, whether the appearing catarrh be a primary disease, or the effect of a tubercle, I consider it as of consequence to cure a catarrh as soon as possible after its first appearance. More especially when it shall linger, and continue for some time, or shall, after some intermission, frequently return, the cure of it should be diligently attempted. The measures requisite for this purpose shall be mentioned afterwards, when we come to treat of catarrh

as a primary disease; but, in the mean time, the means necessary for preventing its producing a phthisis shall be mentioned immediately, as they are the same with those I shall point out as necessary for preventing a phthisis from tubercles.

904. The preventing of a phthisis from asthma must be, by curing, if possible, the asthma, or at least by moderating it as much as may be done: and as it is probable that asthma occasions phthisis, by producing tubercles, the measures necessary for preventing phthisis from asthma, will be the same with those necessary in the case of tubercles, which I am now about to mention.

905. I consider tubercles as by much the most frequent cause of phthisis; and even in many cases where this seems to depend upon hæmoptysis, catarrh, or asthma, it does however truly arise from tubercles. It is upon this subject, therefore, that I shall have occasion to treat of the measures most commonly requisite for curing phthisis.

906. When, in a person born of phthisical parents, of a phthisical habit, at the phthisical period of life, the symptoms (889), in the spring, or beginning of summer, shall appear in the slightest degree, we may presume that a tubercle, or tubercles, either have been formed or are forming in the lungs; and therefore, that every means we

can devise for preventing their formation, or for procuring their resolution, should be employed immediately, even although the patient himself should overlook or neglect the symptoms, as imputing them to accidental cold.

907. This is certainly the general indication; but how it may be executed, I cannot readily say. I do not know that, at any time, physicians have proposed any remedy capable of preventing the formation of tubercles, or of resolving them when formed. The analogy of scrofula gives no assistance in this matter. In scrofula the remedies that are seemingly of most power, are, sea-water, or certain mineral waters; but these have generally proved hurtful in the case of tubercles of the lungs. I have known several instances of mercury very fully employed for certain diseases in persons who were supposed, at the same time, to have tubercles formed, or forming, in their lungs; but though the mercury proved a cure for those other diseases, it was of no service in preventing phthisis, and in some cases seemed to hurry it on.

908. Such appears to me to be the present state of our art, with respect to the cure of tubercles; but I do not despair of a remedy for the purpose being found hereafter. In the meantime, all that at present seems to be within the reach of our art, is to take the measures proper for avoiding the in-

flammation of tubercles. It is probable that tubercles may subsist long without producing any disorder; and I am disposed to think, that nature sometimes resolves and discusses tubercles which have been formed; but that nature does this only when the tubercles remain in an uninflamed state; and therefore, that the measures necessary to be taken, are chiefly those for avoiding the inflammation of the tubercles.

909. The inflammation of a tubercle of the lungs is to be avoided upon the general plan of avoiding inflammation, by blood-letting, and by an antiphlogistic regimen; the chief part of which, in this case, is the use of a low diet. This supposes a total abstinence from animal food, and the using of vegetable food, almost alone: but it has been found, that it is not necessary for the patient to be confined to vegetables of the weakest nourishment, it being sufficient that the farinacea be employed, and together with these, milk.

910. Milk has been generally considered as the chief remedy in phthisis, and in the case of every tendency to it; but whether from its peculiar qualities, or from its being of a lower quality, with respect to nourishment, than any food entirely animal, is not certainly determined. The choice and administration of milk will be properly directed, by considering the nature of the milk of the seve-

ral animals from which it may be taken, and the particular state of the patient with respect to the period and circumstances of the disease, and to the habits of his stomach with respect to milk.

911. A second means of preventing the inflammation of the tubercles of the lungs, is, by avoiding any particular irritation of the affected part which may arise from any violent exercise of respiration; from any considerable degree of bodily exercise; from any position of the body, which straitens the capacity of the thorax; and, lastly, from cold applied to the surface of the body, which determines the blood in greater quantity to the internal parts, and particularly to the lungs.

912. From the last-mentioned consideration, the application of cold in general, and therefore the winter-season, in cold climates, as diminishing the cutaneous perspiration, is to be avoided; but more particularly, that application of cold is to be shunned that may suppress perspiration, to the degree of occasioning a catarrh, which consists in an inflammatory determination to the lungs, and may therefore most certainly produce an inflammation of the tubercles there.

By considering, that the avoiding heat is a part of the antiphlogistic regimen above recommended, and by comparing this with what has been just now said respecting the avoiding cold, the proper choice of climates and seasons for phthisical patients will be readily understood.

913. A third means of avoiding the inflammation of the tubercles of the lungs, consists in diminishing the determination of the blood to the lungs, by supporting and increasing the determination to the surface of the body; which is to be chiefly and most safely done by warm clothing, and the frequent use of the exercises of gestation.

914. Every mode of gestation has been found of use in phthisical cases; but riding on horseback, as being accompanied with a great deal of bodily exercise, is less safe in persons liable to an hæmoptysis. Travelling in a carriage, unless upon very smooth roads, may also be of doubtful effect; and all the modes of gestation that are employed on land, may fall short of the effects expected from them, because they cannot be rendered sufficiently constant; and therefore it is, that sailing, of all other modes of gestation, is the most effectual in pneumonic cases, as being both the smoothest and most constant.

It has been imagined, that some benefit is derived from the state of the atmosphere upon the sea; but I cannot find, that any impregnation of this which can be supposed to take place, can be of service to phthisical persons. It is however probable, that frequently some benefit may be derived from the more moderate temperature and greater purity of the air upon the sea.

915. In order to take off any inflammatory determination of the blood into the vessels of the lungs, blisters applied to some part of the thorax may often be of service; and for the same purpose, as well as for moderating the general inflammatory state of the body, issues of various kinds may be employed with advantage.

916. The several measures to be pursued in the case of what is properly called an Incipient Phthisis, have now been mentioned; but they have seldom been employed in such cases in due time, and have therefore, perhaps, seldom proved effectual. It has more commonly happened, that after some time, an inflammation has come upon the tubercle, and an abscess has been formed, which opening into the cavity of the bronchiæ, has produced an ulcer, and a confirmed phthisis.

917. In this state of matters, some new indications different from the former may be supposed to arise; and indications for preventing absorption, for preventing the effects of the absorbed matter upon the blood, and for healing the ulcer, have been actually proposed. I cannot find, however, that any of the means proposed for executing these indications, are either probable or have

proved effectual. If, upon some occasions, they have appeared to be useful, it has been probably by answering some other intention.

While no antidote against the poison which especially operates here seems to have been as yet found out, it appears to me that too great a degree of inflammation has a great share in preventing the healing of the ulcer which occurs; and such inflammation is certainly what has a great share in urging on its fatal consequences. The only practice, therefore, which I can venture to propose, is the same in the ulcerated as in the crude state of a tubercle; that is, the employment of means for moderating inflammation, which have been already mentioned (909 *et seq.*)

918. The balsamics, whether natural or artificial, which have been so commonly advised in cases of phthisis, appear to me to have been proposed upon no sufficient grounds, and to have proved commonly hurtful. The resinous and acrid substance of myrrh, lately recommended, has not appeared to me to be of any service, and in some cases to have proved hurtful.

919. Mercury, so often useful in healing ulcers, has been speciously enough proposed in this disease; but whether that it be not adapted to the particular nature of the ulcers of the lungs occurring in phthisis, or that it proved hurtful because

it cannot have effect, without exciting such an inflammatory state of the whole system, as, in a hectic state, must prove very hurtful, I cannot determine. Upon many trials which I have seen made, it has proved of no service, and commonly has appeared to be manifestly pernicious.

920. The Peruvian bark has been recommended for several purposes in phthisical cases; and it is said, upon some occasions to have been useful; but I have seldom found it to be so: and as by its tonic power it increases the phlogistic diathesis of the system, I have frequently found it hurtful. In some cases, where the morning remissions of the fever were considerable, and the noon exacerbations well marked, I have observed the Peruvian bark given in large quantities, with the effect of stopping these exacerbations, and at the same time of relieving the whole of the phthisical symptoms: but in the cases in which I observed this, the fever shewed a constant tendency to recur; and at length the phthisical symptoms also returned, and proved quickly fatal.

921. Acids of all kinds, as antiseptic and refrigerant, are useful in cases of phthisis; but the native acid of vegetables is more useful than the fossil acids, as it can be given in much larger quantities, and may also be given more safely than vinegar, being less liable to excite coughing.

922. Though our art can do so little towards the cure of this disease, we must, however, palliate the uneasy symptoms of it as well as we can. The symptoms especially urgent, are the cough and diarrhœa. The cough may be in some measure relieved by demulcents, (873); but the relief obtained by these is imperfect and transitory, and very often the stomach is disturbed by the quantity of oily, mucilaginous, and sweet substances, which are on these occasions taken into it.

923. The only certain means of relieving the cough, is by employing opiates. These, indeed, certainly increase the phlogistic diathesis of the system; but commonly they do not so much harm in this way, as they do service by quieting the cough and giving sleep. They are supposed to be hurtful by checking expectoration: but they do it for a short time only; and, after a sound sleep, the expectoration in the morning is more easy than usual. In the advanced state of the disease, opiates seem to increase the sweatings that occur; but they compensate this, by the ease they afford in a disease which cannot be cured.

924. The diarrhœa which happens in the advanced state of this disease, is to be palliated by moderate astringents, mucilages, and opiates.

Rhubarb, so commonly prescribed in every diarrhœa, and all other purgatives, are extremely pernicious in the colliquative diarrhœa of hectics.

Fresh subacid fruits, supposed to be always laxative, are often, in the diarrhœa of hectics, by their antiseptic quality, very useful.

## CHAP. V.

### OF THE HÆMORRHOIS; OR, OF THE HÆMORRHOIDAL SWELLING AND FLUX.

### SECT. I.

### *Of the Phænomena and Causes of the Hæmorrhois.*

925. A DISCHARGE of blood from small tumours on the verge of the anus, is the symptom which generally constitutes the Hæmorrhois; or, as it is vulgarly called, Hæmorrhoidal Flux. But a discharge of blood from within the anus, when the blood is of a florid colour, shewing it to have come from no great distance, is also considered as the same disease; and physicians have agreed in making two cases or varieties of it, under the names of External and Internal Hæmorrhois.

926. In both cases it is supposed that the flow of blood is from tumours previously formed, which are named Hæmorrhoids, or Piles; and it frequently happens, that the tumours exist without any discharge of blood; in which case, however, they are supposed to be a part of the same disease, and are named Hæmorrhoides Cæcæ, or Blind Piles.

927. These tumours, as they appear without the anus, are sometimes separate, round and prominent, on the verge of the anus; but frequently the tumour is only one tumid ring, forming, as it were, the anus pushed without the body.

928. These tumours, and the discharge of blood from them, sometimes come on as an affection purely topical, and without any previous disorder in other parts of the body; but it frequently happens, even before the tumours are formed, and more especially before the blood flows, that various disorders are felt in different parts of the body, as headach, vertigo, stupor, difficulty of breathing, sickness, colic-pains, pain of the back and loins; and often, together with more or fewer of these symptoms, there occurs a considerable degree of pyrexia.

The coming on of the disease with these symptoms, is usually attended with a sense of fulness, heat, itching, and pain in and about the anus.

Sometimes the disease is preceded by a discharge of serous matter from the anus: and sometimes this serous discharge, accompanied with some swelling, seems to be in place of the discharge of blood, and to relieve those disorders of the system which we have mentioned. This serous discharge, therefore, has been named the Hæmorrhois Alba.

929. In the hæmorrhois, the quantity of blood discharged is different upon different occasions. Sometimes the blood flows only upon the person's going to stool, and commonly, in larger or less quantity, follows the discharge of the fæces. In other cases, the blood flows without any discharge of fæces; and then, generally, it is after having been preceded by the disorders above mentioned, when it is also commonly in larger quantity. This discharge of blood is often very considerable; and, by the repetition, it is often so great, as we could hardly suppose the body to bear but with the hazard of life. Indeed, though rarely, it has been so great as to prove suddenly fatal. These considerable discharges occur especially to persons who have been frequently liable to the disease. They often induce great debility: and frequently a leucophlegmatia, or dropsy, which proves fatal.

The tumours and discharges of blood in this disease, often recur at exactly stated periods.

930. It often happens, in the decline of life, that the hæmorrhoidal flux, formerly frequent, ceases to flow; and, upon that event, it generally happens, that the persons are affected with apoplexy or palsy.

931. Sometimes hæmorrhoidal tumours are affected with considerable inflammation; which, ending in suppuration, gives occasion to the formation of fistulous ulcers in those parts.

932. The hæmorrhoidal tumours have been often considered as varicous tumours or dilatations of veins; and it is true, that in some cases varicous dilatations have appeared upon dissection. These, however, do not always appear; and I presume it is not the ordinary case, but that the tumours are formed by an effusion of blood into the cellular texture of the intestine near to its extremity. These tumours, especially when recently formed, frequently contain fluid blood; but, after they have remained for some time, they are commonly of a firmer substance.

933. From a consideration of their causes, to be hereafter mentioned, it is sufficiently probable, that hæmorrhoidal tumours are produced by some interruption of the free return of blood from the veins of the lower extremity of the rectum; and it is possible, that a considerable accumulation of

blood in these veins may occasion a rupture of their extremities, and thus produce the hæmorrhagy or tumours I have mentioned. But considering that the hæmorrhagy occurring here is often preceded by pain, inflammation, and a febrile state, as well as by many other symptoms which shew a connection between the topical affection and the state of the whole system, it seems probable, that the interruption of the venous blood, which we have supposed to take place, operates in the manner explained in 769; and therefore, that the discharge of blood here is commonly from arteries.

934. Some physicians have been of opinion, that a difference in the nature of the hæmorrhois, and of its effects upon the system, might arise from the difference of the hæmorrhodial vessels from which the blood issued. But it appears to me, that hardly in any case we can distinguish the vessels from which the blood flows; and that the frequent inosculations of both the arteries and veins which belong to the lower extremity of the rectum, will render the effects of the hæmorrhagy nearly the same, from whichsoever of these vessels the blood proceed.

935. In 769, I have endeavoured to explain the manner in which a certain state of the sanguiferous system might give occasion to an hæmorrhodial

flux; and I have no doubt, that this flux may be produced in that manner. I cannot, however, by any means admit, that the disease is so often produced in that manner, or that, on its first appearance, it is so frequently a systematic affection, as the Stahlians have imagined, and would have us to believe. It occurs in many persons before the period of life at which the venous plethora takes place: it happens to females in whom a venous plethora, determined to the hæmorrhoidial vessels, cannot be supposed; and it happens to both sexes, and to persons of all ages, from causes which do not affect the system, and are manifestly suited to produce a topical affection only.

936. These causes of a topical affection are, in the first place, the frequent voiding of hard and bulky fæces, which, not only by their long stagnation in the rectum, but especially when voided, must press upon the veins of the anus, and interrupt the course of the blood in them. It is for this reason that the disease happens so often to persons of a slow and bound belly.

937. From the causes just now mentioned, the disease happens especially to persons liable to some degree of a prolapsus ani. Almost every person, in voiding fæces, has the internal coat of the rectum more or less protruded without the body; and this will be to a greater or less degree, according

as the hardness and bulk of the fæces occasion a greater or less effort or pressure upon the anus. While the gut is thus pushed out, it often happens, that the sphincter ani is contracted before the gut is replaced; and, in consequence thereof, a strong constriction is made, which preventing the fallen-out gut from being replaced, and at the same time preventing the return of blood from it, occasions its being considerably swelled, and its forming a tumid ring round the anus.

938. Upon the sphincter's being a little relaxed, as it is immediately after its strong contraction, the fallen-out portion of the gut is commonly again taken within the body; but, by the frequent repetition of such an accident, the size and fulness of the ring formed by the fallen-out gut, is much increased. It is therefore more slowly and difficultly replaced; and in this consists the chief uneasiness of hæmorrhoidal persons.

939. As the internal edge of the ring mentioned, is necessarily divided by clefts, the whole often assumes the appearance of a number of distinct swellings; and it also frequently happens, that some portions of it, more considerably swelled than others, become more protuberant, and form those small tumours more strictly called Hæmorrhoids, or Piles.

940. From considering that the pressure of fæces, and other causes interrupting the return of venous blood from the lower extremity of the rectum, may operate a good deal higher up in the gut than that extremity, it may be easily understood, that tumours may be formed within the anus; and probably it also happens, that some of the tumours formed without the anus, as in 939, may continue when taken within the body, and even be increased by the causes just now mentioned. It is thus that I would explain the production of internal piles, which, on account of their situation and bulk, are not protruded on the person's going to stool, and are often therefore more painful. The same internal piles are more especially painful, when affected by the hæmorrhagic effort, described in 745, and 769.

941. The production of piles is particularly illustrated by this, that pregnant women are frequently affected with them. This is to be accounted for, partly from the pressure of the uterus upon the rectum, and partly from the costive habit to which pregnant women are usually liable. I have known many instances of piles occurring for the first time during the state of pregnancy; and there are few women that have born children, who are afterwards entirely free from piles. The Stahlians have commonly asserted, that the male sex is more frequently affected with this disease than the fe-

male; but in this country I have constantly found it otherwise.

942. It is commonly supposed, that the frequent use of purgatives, especially of those of the more acrid kind, and more particularly of aloetics, is apt to produce the hæmorrhodial affection; and as these purgatives stimulate chiefly the great guts, it seems sufficiently probable that they may excite this disease.

943. I have now mentioned several causes which may produce the hæmorrhoidal tumours and flux as a topical affection only; but must observe farther, that although the disease appears first as a purely topical affection, it may, by frequent repetition, become habitual, and therefore may become connected with the whole system, in the manner already explained with respect to hæmorrhagy in general, in 748.

944. The doctrine now referred to, will, it is apprehended, apply very fully to the case of the hæmorrhoidal flux; and will the more readily apply, from the person who has been once affected being much exposed to a renewal of the causes which first occasioned the disease; and from many persons being much exposed to a congestion in the hæmorrhodial vessels, in consequence of their being often in an erect position of the body, and in

an exercise which pushes the blood into the depending vessels, while at the same time, the effects of these circumstances are much favoured by the abundance and laxity of the cellular texture about the rectum.

945. It is thus that the hæmorrhoidal flux is so often artificially rendered an habitual and systematic affection; and I am persuaded, that it is this which has given occasion to the Stahlians to consider the disease as almost universally such.

946. It is to be particularly observed here, that when the hæmorrhoidal disease has either been originally, or has become, in the manner just now explained, a systematic affection, it then acquires a particular connection with the stomach, so that certain affections there excite the hæmorrhoidal disease, and certain states of the hæmorrhoidal affection excite disorders of the stomach.

It is perhaps owing to this connection, that the gout sometimes affects the rectum. See 525.

## SECT. II.

### *Of the cure of Hæmorrhoidal affections.*

947. Almost at all times it has been an opinion amongst physicians, and from them spread amongst the people, that the hæmorrhoidal flux is a salutary

evacuation, which prevents many diseases that would otherwise have happened; and that it even contributes to give long life. This opinion, in later times, has been especially maintained by Dr. Stahl, and his followers; and has had a great deal of influence upon the practice of physic in Germany.

948. The question arises with respect to hæmorrhagy in general, and indeed it has been extended so far by the Stahlians. I have accordingly considered it as a general question, (767, 780); but it has been more especially agitated with regard to the disease now under our consideration: and as to this, although I am clearly of opinion, that the hæmorrhois may take place in consequence of the general state of the system (769), or, what is still more frequent, that by repetition it may become connected with that general state (943), and in either case cannot be suppressed without great caution; I must beg leave, notwithstanding this, to maintain, that the first is a rare case; that generally the disease first appears as an affection purely topical, (935, 942), and that the allowing it to become habitual is never proper. It is a nasty disagreeable disease, ready to go to excess, and to be thereby very hurtful, as well as sometimes fatal. At best it is liable to accidents, and thereby to unhappy consequences. I am therefore of opinion, that not only the first approaches of the disease are to be guarded against, but even that, when it has

taken place for some time, from whatever cause it may have proceeded, the flux is always to be moderated, and the necessity of it, if possible, superseded.

949. Having delivered these general rules, I proceed to mention more particularly, how the disease is to be treated, according to the different circumstances under which it may appear.

When we can manifestly discern the first appearance of the disease to arise from causes acting upon the part only, the strictest attention should be employed in guarding against the renewal of these causes.

950. One of the most frequent of the remote causes of the hæmorrhoidal affections, is a slow and bound belly, (936): and this is to be constantly obviated by a proper diet; which each individual's own experience must direct; or, if the management of diet be not effectual, the belly must be kept regular by such medicines as may prove gently laxative, without irritating the rectum. In most cases, it will be of advantage to acquire a habit with respect to time, and to observe it exactly.

951. Another cause of hæmorrhois to be especially attended to, is the prolapsus or protrusion of the anus, which is apt to happen on a person's having a stool, (937). If it shall occur to

any considerable degree, and at the same time be not easily and immediately replaced, it most certainly produces piles, or increases them when otherwise produced. Persons, therefore, liable to this prolapsus, should, upon their having been at stool, take great pains to have the gut immediately replaced, by lying down in a horizontal posture, and pressing gently upon the anus, till the reduction shall be completely obtained.

952. When the prolapsus of which I speak is occasioned only by voiding hard and bulky fæces, it should be obviated by the means mentioned in 950, and may be thereby avoided. But in some persons it is owing to a laxity of the rectum; in which case it is often most considerable upon occasion of a loose stool: and then the disease is to be treated by astringents, as well as by proper artifices for preventing the falling down of the gut.

953. These are the means to be employed upon the first approaches of the hæmorrhoidal affection; and when from neglect it shall have frequently recurred, and has become in some measure established, they are no less proper. In the latter case, however, some other means are also necessary. It is particularly proper to guard against a plethoric state of the body; consequently, to avoid a sedentary life, a full diet, and particularly intemperance in the use of strong liquor, which, as I

should have observed before, is, in all cases, of hæmorrhagy of the greatest influence in increasing the disposition to the disease.

954. I need hardly repeat here, that exercise of all kinds must be a chief means of obviating and removing a plethoric state of the body; but upon occasion of the hæmorrhoidal flux immediately approaching, both walking and riding, as increasing the determination of the blood into the hæmorrhoidial vessels, are to be avoided. At other times, when no such determination has been already formed, those modes of exercise may be very properly employed.

955. Cold bathing is another remedy that may be employed to obviate plethora, and prevent hæmorrhagy; but it is to be used with caution. When the hæmorrhoidal flux is approaching, it may be dangerous to turn it suddenly aside by cold bathing; but during the intervals of the disease, this remedy may be employed with advantage; and in persons liable to a prolapsus ani, the frequent washing of the anus with cold water may be very useful.

956. These are the means for preventing the recurrence of the hæmorrhoidal flux; and in all cases, when it is not immediately approaching, they are to be employed. When it has actually

come on, means are to be employed for moderating it as much as possible, by the person's lying in a horizontal position upon a hard bed; by avoiding exercise in an erect posture; by using a cool diet; by avoiding external heat; and by obviating the irritation of hardened fæces by the use of proper laxatives, (950). From what has been said above, as to the being careful not to increase the determination of the blood into the hæmorrhoidal vessels, the propriety of these measures must sufficiently appear; and if they were not so generally neglected, many persons would escape the great trouble, and the various bad consequences, which so frequently result from this disease.

957. With respect to the further cure of this disease, it is almost in two cases only that hæmorrhoidal persons call for the assistance of the physician. The one is, when the affection is accompanied with much pain; and of this there are two cases, according as the pain happens to attend the external or the internal piles.

958. The pain of the external piles arises especially when a considerable protrusion of the rectum has happened; and when, continuing unreduced, it is strangled by the constriction of the sphincter; while, at the same time, no bleeding happens, to take off the swelling of the protruded portion of the intestine. Sometimes an inflammation super-

venes, and greatly aggravates the pain. To relieve the pain in this case, emollient fomentations and poultices are sometimes of service; but a more effectual relief is to be obtained by applying leeches to the tumid parts.

959. The other case in which hæmorrhoidal persons seek assistance, is that of excessive bleeding. Upon the opinion so generally received, of this discharge being salutary, and from the observation, that upon the discharge occurring, persons have sometimes found relief from various disorders, the most part of persons liable to it are ready to let it go too far; and indeed the Stahlians will not allow it to be a disease, unless when it has actually gone to excess. I am, however, well persuaded, that this flux ought always to be cured as soon as possible.

960. When the disease occurs as a purely topical affection, there can be no doubt of the propriety of this rule; and, even when it has occurred as a critical discharge in the case of a particular disease, yet, when this disease shall have been entirely cured and removed, the preventing any return of the hæmorrhois seems to be both safe and proper.

961. It is only when the disease arises from a plethoric state of the body, and from a stagnation

of blood in the hypochondriac region, or when, though originally topical, the disease, by frequent repetition, has become habitual, and has thereby acquired a connection with the whole system, that any doubt can arise as to the safety of curing it entirely. Even in these cases, however, I apprehend it will be always proper to moderate the bleeding; lest, by its continuance or repetition, the plethoric state of the body, and the particular determination of the blood into the hæmorrhoidal vessels, be increased, and the recurrence of the disease, with all its inconveniencies and danger, be too much favoured.

962. Further, even in the cases stated, (961), in so far as the plethoric state of the body, and the tendency to that state, can be obviated and removed, this is always to be diligently attempted; and if it can be executed with success, the flux may be entirely suppressed.

963. The Stahlian opinion, that the hæmorrhoidal flux is only in excess when it occasions great debility, or a leucophlegmatia, is by no means just; and it appears to me, that the smallest approach towards *producing* either of these, should be considered as an excess, which ought to be prevented from going farther.

964. In all cases, therefore, of excess, or of

any approach towards it, and particularly when the disease depends upon a prolapsus ani (951), I am of opinion that astringents, both internal and external, may be safely and properly employed; not indeed to induce an immediate and total suppression, but to moderate the hæmorrhagy, and by degrees to suppress it altogether, while at the same time measures are taken for removing the necessity of its recurrence.

965. When the circumstances (946), marking a connection between the hæmorrhoidal affection and the state of the stomach occur, the measures necessary are the same as in the case of atonic gout.

END OF THE FIRST VOLUME.

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*Printed by Mundell, Doig, and Stevenson, Edinburgh.*